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XMU+

ATIS Guide

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XMU+ ATIS Guide
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Interalia Inc.
Marketing Department
4110 - 79th Street N.W.
Calgary, Alberta, Canada T3B 5C2
Phone: (403) 288-2706
Fax: (403) 288-5935

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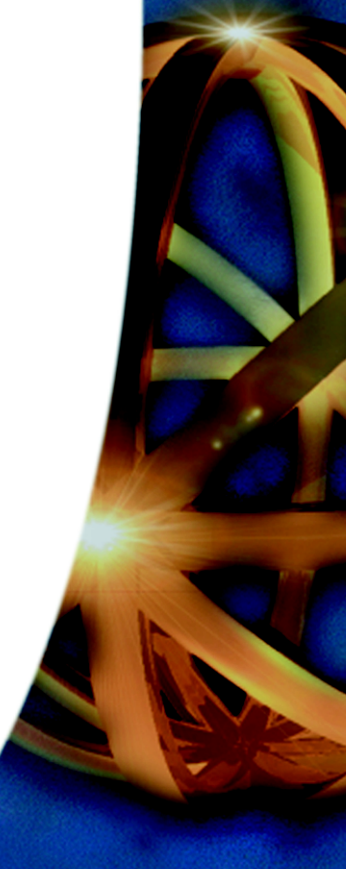
1

ATIS Overview

Read this chapter to gain an understanding of the special applications listed below.



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In this chapter ...

- *Automatic Terminal Information System (ATIS)* on page 3

Automatic Terminal Information System (ATIS)

Overview

Interalia's Automatic Terminal Information System (ATIS) is a solid-state audio recording system used at airports to transmit repetitive information to arriving and departing airplanes. Pilots can receive important information even if the airport is not staffed or the personnel are busy. Information such as wind speed, air temperature, wind direction, visibility and runway conditions are typically recorded, then broadcast 24 hours-a-day to approaching or departing planes via a transmitter.

Typical ATIS Users

- NAV CANADA
- US Federal Aviation Administration (FAA)
- US Air National Guard
- US Air Force
- Raytheon Corporation (Canada)
- AERONAUTICA CIVIL (Colombia)
- Royal Malaysian Air Force

Cards

The following Line Cards are available for XMU+ ATIS operation.

- Model 47371: 4 transmitter ports without PSTN ports.
- Model 47374: 4 transmitter ports with 4 PSTN ports.

2

Installing the XMU+

The installation process consists of physical installation at the appropriate location, connecting the XMU+ to its designated power supply, and checking system startup.

Caution: **Standard** electro-static discharge (ESD) precautions must be followed when handling any internal components.
Interalia® cannot be held responsible for damage to parts or equipment caused by improper handling or installation.

Caution: **XMU+** ATIS equipment is to be installed by qualified personnel in Restricted Access Locations (RAL) where access is limited to qualified service personnel only.
XMU+ ATIS Anlagen müssen von qualifiziertem Personal in zugangsbeschränkten Bereichen installiert werden, wo der Zugang auf qualifiziertes Dienstleistungspersonal beschränkt ist.

Caution: **When** configuring jumpers on the ATIS Control Card or Line Card, the cards are to be removed from the chassis. Do not remove chassis covers and attempt to configure jumpers while the cards are operating as hazardous voltages are present inside the unit.
Bei der Konfiguration der Steckbrücken auf der ATIS Steuerungs- bzw. Leitungskarte, sind die Karten von dem Platinenaufnahmerahmen zu entfernen. Da gefährliche Spannungen im Inneren der Einheit herrschen, dürfen während des Betriebs die Abdeckungen des Platinenaufnahmerahmens nicht entfernt werden und es darf nicht versucht werden, die Konfiguration der Steckbrücken vorzunehmen!

Please see additional safety information on the following pages:

- Page 9: Installation and Power Supply
- Page 25: Remote Port Configuration
- Page 28: Line Card protective grounding and connection order

Siehe auch zusätzliche Sicherheitshinweise auf folgenden Seiten:

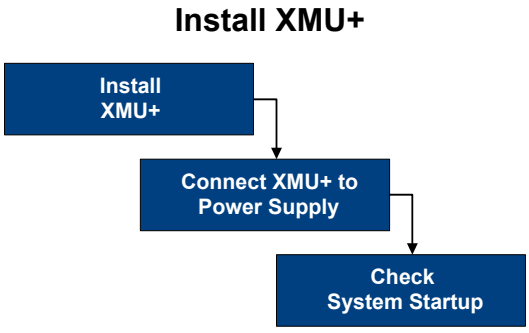
- Seite 9: Installation und Stromversorgung
- Seite 25: Konfiguration der Fernanschlüsse
- Seite 28: Leitungskarte: Schutzleiter (Schutzerdung) und Verbindungsreihenfolge

In this chapter...

- *Installation Activities* on page 7.
- *Installing the XMU+ ATIS Unit* on page 8.
- *Checking System Startup* on page 10.

Installation Activities

Complete the following activities to install the XMU+:



1. If required, install the XMU+ in a rack or on a wall.
   See *To install an XMU+ ATIS in a rack* on page 8 or *To mount an XMU+ ATIS to a wall* on page 9 for more information.
2. Connect the XMU+ ATIS to its power supply. For the large chassis, could be to one or both of the following power supplies:
   - AC power. See page 18 Installation Handbook for more information.
   - DC power. See page 18 Installation Handbook for more information.

: **Note:** Since the AC power cord is the disconnect for the XMU+, ensure that the AC receptacle is near the unit.
Sicherheitshinweis: Der Netzstecker ist die An-/Ausschaltung für die XMU+. Vergewissern Sie sich deshalb, daß der Nestzanschluß in der Nähe der Maschine und leicht erreichbar ist.

3. Check to ensure proper system startup. See *Checking System Startup* on page 10 for more information.

Installing the XMU+ ATIS Unit

Ensure that the following tools, hardware, and accessories are near:

- The XMU+ ATIS unit.
- Mounting brackets and screws.
- Philips screwdriver.

To install an XMU+ ATIS in a rack

1. Ensure that the mounting brackets are the correct size (19” or 23”).

2. Attach the rack mounting bracket to the XMU+ with the screws provided, as shown below:

Small Chassis

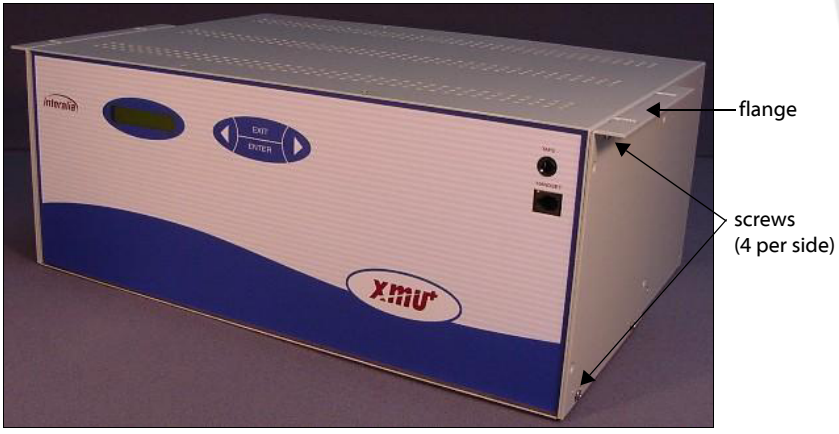
Large Chassis

3. Install the XMU+ in the rack using the flanges of the mounting brackets.

To mount an XMU+ ATIS to a wall

19" rack mounting brackets can be turned 90º and used to mount a large chassis XMU+ on a wall. Small chassis XMU+ units must be ordered with specific wall mounting brackets.

1. Attach the mounting brackets to the XMU+ ATIS with the screws provided, as shown below:



2. Use appropriate screws to mount the XMU+ to a plywood backboard.

Note: Do ***not*** mount the XMU+ ATIS directly to standard wall board material.

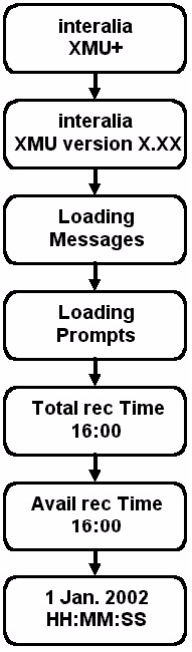
Checking System Startup

At system startup, the XMU+ ATIS identifies the current system configuration. You should watch the information displayed on the LCD to ensure that the XMU+ ATIS is working correctly.

Since the system configuration information may be required at a later date for maintenance and upgrades, you should record it.

To check system startup

1. Attach the XMU+ ATIS to the appropriate power supply.
2. Verify that the LCD illuminates.
3. Verify that the XMU+ ATIS identifies the current system configuration in the following order:
   - The current firmware version installed.
   - Proper loading of messages and prompts.
   - The total amount of recording time currently installed.
   - The amount of recording time that is currently available.
   - The date and time.



3

Cabling the XMU+ ATIS

Cabling the XMU+ ATIS involves connecting and/or wiring each line card to the appropriate PBX, transmitter, or amplifier. In addition, it involves cabling the Control card to the appropriate connections, which could include:

- Alarm connection.
- Telephone lines for Remote Access and modem connections.
- Ethernet (network or direct) connection.
- Direct RS-232 connection.

ESD

Electrostatic Discharge

Caution: The cabling of the XMU+ ATIS should only be completed by a qualified telecommunications / electronics technician. Standard static discharge precautions must be followed when handling any internal components. ESD precautions should also be observed.

Interalia® cannot be held responsible for damage to parts or equipment caused by improper handling or installation.

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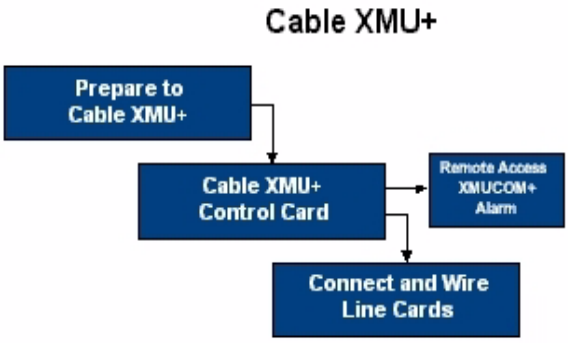
In this chapter...

- *Cabling Activities* on page 13.
- *Preparing to Cable the XMU+ ATIS* on page 14.
- *Cabling the XMU+ ATIS Control Card* on page 17.
- *Cabling XMU+ ATIS Line Cards* on page 27.

Cabling Activities

Complete the following activities to connect and wire the XMU+ ATIS:



1. Ensure that the appropriate preparations are taken before cabling the XMU+. See *Preparing to Cable the XMU+ ATIS* on page 14.
2. Cable the Control card to the appropriate connections. See *Cabling the XMU+ ATIS Control Card* on page 17.
3. Connect and wire the ATIS line cards using the *Cabling XMU+ ATIS Line Cards* on page 27.

Note: Cabling for a Master / Slave (redundancy) system is described in *Hot Standby System* on page 64

Preparing to Cable the XMU+ ATIS

To properly cable the various Control card connections, as well as to wire and connect XMU+ ATIS line cards, you should ensure that the following prerequisites have been met:

- Ensure that the appropriate cables are available for connecting and wiring the XMU+.
  See *Matching XMU+ ATIS Cables and Connectors* on page 15.
  As always, cables should be properly managed during XMU+ ATIS connecting and wiring, and properly stored after installation.
- Match the connector pinouts to specific line cards.
  See *RJ-21 50-pin Connector* on page 16.
- Understand the conventions used in this chapter.
  See *Interface Table Conventions and Abbreviations* on page 14.

Interface Table Conventions and Abbreviations

The following color abbreviations are used in the PBX interface tables.

Abbreviation...	Cable Color...	Abbreviation...	Cable Color...
Blk	Black	Grn	Green
Brn	Brown	Blu	Blue
Red	Red	Vlt	Violet
Org	Orange	Slt	Slate
Yel	Yellow	Wht	White

In addition, the following conventions are used in the PBX interface tables.

This Convention...	Identifies...
Pin	The pin number on the 50 position connector.
Color	The wire color/stripe color for the wire corresponding to the pin on the 50 position connector.

Matching XMU+ ATIS Cables and Connectors

Use the following table to match Control card and line card connectors to the appropriate cables and mating connectors.

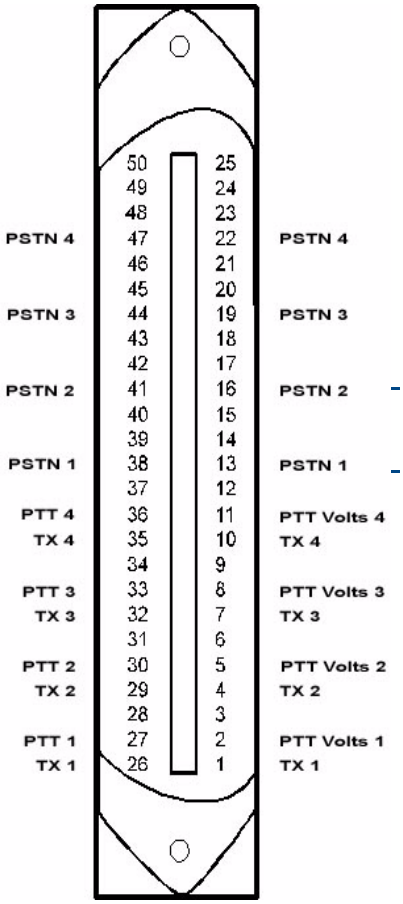
XMU+ Card...	Connector on card...	Used to...	Requires connector and cable...
Control Card	MODEM - RJ-11 connector	Communicate with XMUCOM+.	RJ-11 Mating Connector (telephone jack) and telephone cable.
	REMOTE - RJ-11 connector	Program messages from a remote location using a touch tone telephone.	RJ-11 Mating Connector (telephone jack) and telephone cable.
	ALARM - Alarm Connector	Connect alarm circuitry.	Alarm Mating Connector and ribbon cable.
	SERIAL-1 - RS-232 connector	Set up connection to XMUCOM+.	RJ-45 to RJ-45 (6ft.) connector and cable and one of the following: ◆ RJ-45 to DB-25 converter. ◆ RJ-45 to DB-9 converter.
	SERIAL-2 - RS-232 connector	Perform future applications.	RS-232 Mating Connector and RJ-45 to RJ-45 Ethernet cable.
	NETWORK - RJ-45	Set up connections to XMUCOM+ software via an Ethernet network.	One of the following: ◆ RJ-45 to RJ-45 (6ft.) Category 5 UTP network connector and cable for LAN connection. ◆ RJ-45 to RJ-45 crossover cable for (direct) connection.

RJ-21 50-pin Connector

Use the Amphenol RJ-21 50-pin Connector to connect the line cards to the transmitter.

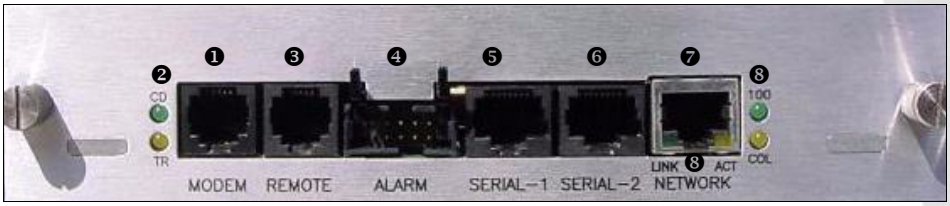
Each line on the Amphenol 50-pin connector has a tip (-)/ring (+) pair. The tip/ring pair provides the message audio path.

Note: See *Cabling XMU+ ATIS Line Cards* on page 27



Cabling the XMU+ ATIS Control Card

The XMU+ ATIS Control card must be cabled to handle the inputs and outputs from alarms, remote access, and PC communications. The Control card has 6 connector ports, as shown below:



This Port...	Is used by XMU+ to...	See...
❶ MODEM (RJ-11 connector)	Provide external communication with XMUCOM+ software.	*To connect to the PC with an analog line to modem* on page 21.
❷ Modem Status Indicators	The indicator displays the MODEM port status: ◆ Green - carrier detect. ◆ Yellow - transmit and receive data.	
❸ REMOTE (RJ-11 connector)	Program messages from a remote location using a touch tone telephone.	*Connecting Remote Telephone Access* on page 23.
❹ ALARM (2 x 5 header connection)	Connect XMU+ to alarm circuitry.	*Connecting Alarms (optional)* on page 25.
❺ SERIAL-1 (RS-232 connector)	Provide external communication with XMUCOM+ software.	*To connect to the PC directly using the RS-232 port* on page 21.
❻ SERIAL-2 (RS-232 connector)	Provide future applications.	Information not yet available.
❼ NETWORK (RJ-45 connector)	Provide external communication with XMUCOM+ software.	*To connect to the PC through an Ethernet (LAN) Network* on page 22.

This Port...	Is used by XMU+ to...	See...
❽ Network Status Indicators	The indicators display the NETWORK port status: ◆ Green (in connector)- link. ◆ Yellow (in connector) - activity (transmit and receive data). ◆ Green - 100 Base T (when on) and 10 Base T (when off). ◆ Yellow - collision.	

Connecting the XMU+ ATIS to a PC with XMUCOM+ Software

The XMUCOM+ software is a Windows based program that allows you to program, download, update, and backup configurations and messages to the XMU+ ATIS from a PC. See the *XMU+ QuickStart Guide* for more information about XMUCOM+ software and configurations.

Users that have multiple XMU+ ATIS units distributed across several geographical sites must consider how to interconnect and communicate with the various units. Depending on the location, available network facilities, and modem capabilities of the XMUCOM+ system and XMU+ ATIS units, users can choose to apply a combination of one or more of the following communication methods for each of their XMU+ ATIS sites:

Use...	To let the XMU+ communicate with XMUCOM+...
Direct Connection	When the XMU+ and the PC are located within the same room. This method is effective for smaller installations, but it is not effective for organizations employing multiple XMU+ sites. Direct connections require a serial cable, and an adapter for the RJ-45 connector so that it can be plugged into the PC COM port. See *To connect to the PC directly using the RS-232 port* on page 21 for more information.
Modem Connection	Through a dial-up modem connection. This method is effective for sites that are not linked through LAN/WAN networks. Modem connections require PC's with a modem, and the modem phone numbers for the XMU + unit. See *To connect to the PC with an analog line to modem* on page 21 for more information.
Ethernet (LAN) Connection	Through LAN/WAN networks. This method is effective for organizations that have existing LAN/WAN networks operating at all XMU+ sites. Ethernet connections require: ◆ A network card to be installed within the XMUCOM+ PC. ◆ Both the PC and XMU+ unit be connected to the network for LAN access. ◆ A fixed IP address for the XMU+ unit. ◆ An IP address for the XMUCOM+ (Admin) PC. See *To connect to the PC through an Ethernet (LAN) Network* on page 22 for more information.

Use...	To let the XMU+ communicate with XMUCOM+...
Direct Ethernet Connection	With a non-LAN Ethernet connection by connecting the network port of a PC directly to the network port on the XMU+ using an RJ-45 “crossover” cable. In this case, the data transfer speeds are much faster than direct connection (RS-232). Use this method if your PC is equipped with a network card, but does not have an available LAN to connect with. The cross-over cable creates a separate network connection between the PC and the XMU+ unit. Direct Ethernet connections require: ◆ A network card to be installed within the XMUCOM+ PC. ◆ A cross-over Ethernet Cable (provided by Interalia). ◆ An IP address for the XMU+ unit (default on unit is 192.168.100.2) ◆ An IP address for the XMUCOM+ (Admin) PC. See *To connect to the PC directly with the Network port* on page 22 for more information.

The best way for XMU+ ATIS to communicate with XMUCOM+ depends on the communication systems currently available in the environment in which the XMU+ ATIS will be placed.

Ideally, the XMUCOM+ software and the XMU+ ATIS unit should be installed concurrently so that full testing can be completed. See the *XMU+ QuickStart Guide* for more information.

To connect to the PC directly using the RS-232 port

Use direct connection to the RS-232 port on the XMU+ ATIS Control card when the XMU+ ATIS unit and XMUCOM+ PC are located in close proximity (the same room or desk) to each other. See *Cabling the XMU+ ATIS Control Card* on page 17 for more information.

Direct connections require the following:

RJ45 to DB9 converter (front/rear view)

RJ45 to DB25 converter (front/rear view)

RJ-45 to RJ-45 serial cable

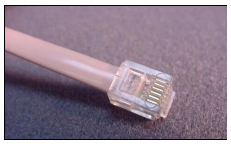
1. Ensure that there is a vacant DB-25 or DB-9 port on the PC.
2. If you do not use Interalia supplied, pre-configured converters, then wire the RJ-45 connector pinouts as per the following table:

XMU to PC DB-9 Female	XMU to PC DB-25 Female		RJ-45	
pin 3	pin 2	TxD	pin 5	Green
pin 2	pin 3	RxD	pin 6	Yellow
pin 7	pin 4	RTS	pin 7	Brown
pin 8	pin 5	CTS	pin 8	White
pin 5	pin 7	Gnd	pin 4	Red

3. Connect one end of the RJ-45 to RJ-45 cable to the RS-232 port on the XMU+. See page 10 Installation Handbook for more information about the RJ-45 to RJ-45 cable.
4. Plug the free end of the RJ-45 cable into the RJ-45 end of the appropriate converter (RJ-45 to DB-25 or RJ-45 to DB-9).
5. Connect the free end of the converter to the PC's DB9 or DB25 port.

To connect to the PC with an analog line to modem

Modem connections require the following:


POTS Line

POTS

Plain Old Telephone Service

The XMU+ ATIS provides a modem access port, which is accessed through the MODEM connector on the Control card. See *Cabling the XMU+ ATIS Control Card* on page 17 for more information. An analog line is connected (using a standard telephone jack and cable) to the XMU+ ATIS.

1. Ensure that a vacant, active telephone outlet is nearby. If one is not nearby, install one. Always take the following safety precautions when installing or modifying telephone lines:
   - Never install wiring during a lightning storm.
   - Never install a jack in a wet location unless the jack is specifically designed for wet locations.
   - Never touch uninsulated wires or terminals unless the lines have been disconnected at the network interface.
2. Connect the one end of the POTS line to the RJ-11 modem port on the XMU+.

3. Plug the free end of the POTS line into the vacant, active telephone outlet.

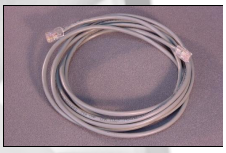
To connect to the PC through an Ethernet (LAN) Network

The XMU+ ATIS provides an RJ-45 port to connect to the XMU+ to a PC via a network. See *Cabling the XMU+ ATIS Control Card* on page 17 for more information.

1. Ensure that a vacant, active network outlet is nearby. If one is not nearby, install one. Always take the following safety precautions when installing or modifying network lines:
   - Never install wiring during a lightning storm.
   - Never install a jack in a wet location unless the jack is specifically designed for wet locations.
   - Never touch uninsulated wires or terminals unless the lines have been disconnected at the network interface.
2. Connect one end of the RJ-45 to RJ-45 cable to the NETWORK RJ-45 port on the XMU+ ATIS. See page 10 Installation Handbook for more information about the RJ-45 to RJ-45 cable.
3. Plug the free end of the RJ-45 to RJ-45 cable into the vacant, active network outlet.
4. Ensure the “link” LED is on (green).

To connect to the PC directly with the Network port

Ethernet (direct) connections require the following:



RJ-45 to RJ-45 crossover cable

It is possible to create a non-LAN Ethernet connection by connecting the network port of a PC directly to the network port on the XMU+ ATIS with a crossover cable. In this case, the data transfer speeds are much faster than direct connection (RS-232). See *Cabling the XMU+ ATIS Control Card* on page 17 for more information.

1. Ensure that there is a vacant Network port on the PC.
2. Connect one end of the RJ-45 to RJ-45 crossover cable to the NETWORK RJ-45 port on the XMU+ ATIS. See page 10 Installation Handbook for more information about the RJ-45 to RJ-45 cable.
3. Plug the free end of the RJ-45 to RJ-45 crossover cable into the PC’s Network port.
4. Ensure the “link” LED is on (green).

Connecting Remote Telephone Access

DTMF

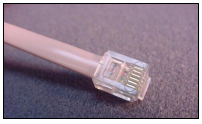
Dual Tone
Multi Frequency

The XMU+ ATIS provides a remote telephone access port, which is accessed through the REMOTE RJ-11 connector on the Control card. See *Cabling the XMU+ ATIS Control Card* on page 17 for more information.

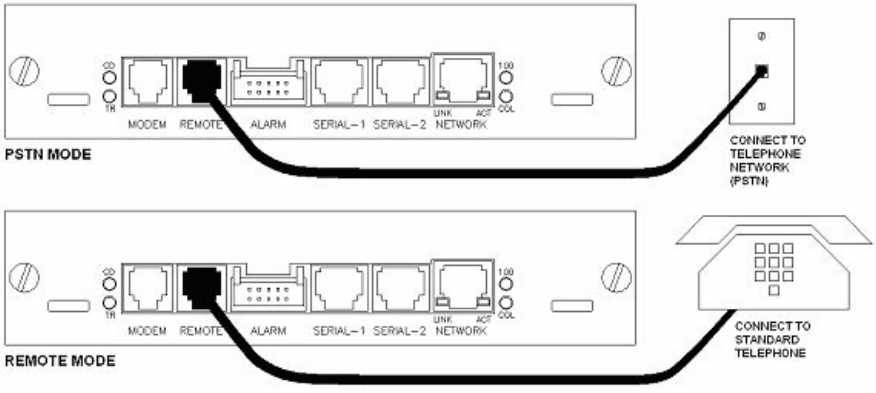
There are two possible modes of remote port operation:

1. PSTN Mode: An analog line is connected (using a standard telephone jack and cable) to the XMU+ ATIS remote port to provide Remote Access to the XMU+. The telephone number for that analog line must be dialed.
2. REMOTE Mode: A standard telephone set is connected to the XMU+ ATIS remote port to provide Remote Access to the XMU+. Lifting the telephone's handset automatically connects the control card – no number has to be dialed.

Remote Access connections require the following:



POTS Line



Either mode of Remote Access allows control of the XMU+ ATIS from a remote location using a DTMF (touch tone) telephone. Thus an operator who is not in the same room as the XMU+ ATIS, or who does not have XMUCOM+ installed on their PC, can still create and modify XMU+ messages.

To configure the Control Card for Remote Port mode

Caution: **The** control card is configured for PSTN or REMOTE mode of operation by moving jumpers located on headers J3 and J4 of the card's 10636 daughter board (mounted above main board just behind face plate). Mode selection is to be done by qualified personnel only. Jumpers on J3 and J4 must be moved in tandem for continued and correct operation. The REMOTE port cable must be disconnected before changing modes with the jumpers.
PSTN* (TNV)** / REMOTE Betriebsartensteckbrücken auf J3 und J4 der Platine 10636 müssen hintereinander entfernt werden, um weiterhin den ordnungsgemäßen, sicheren Betrieb zu gewährleisten. Die Betriebsartenwahl muss von Fachpersonal durchgeführt werden. Das Fernanschlusskabel muss vor dem Betriebsartenwechsel mit den Steckbrücken entfernt werden.
* öffentliches gekoppeltes Telefonnetz
** Telekom-Netz-Spannung.

ATIS Control Card daughterboard jumpers set for PSTN mode (for connecting REMOTE port to PSTN).

Tochterplatinensteckbrücken auf der ATIS Steuerungskarte sind auf PSTN-Modus einzustellen (zum Anschließen des Fernanschlusses an das PSTN).

ATIS
Control Card daughterboard jumpers set for Remote mode (for connecting REMOTE port to standard telephone).

Tochterplatinensteckbrücken auf der ATIS Steuerungskarte sind auf Fernmodus einzustellen (zum Anschließen des Fernanschlusses an das Standardtelefonnetz).

To connect an analog line to provide Remote Telephone Access

1. Ensure that a vacant, active telephone outlet is nearby. If one is not nearby, install one. Prior to working with telephone lines, please refer to the following safety considerations:
   - Never install telephone wiring during a lightning storm.
   - Never install a telephone jack in a wet location unless the jack is specifically designed for wet locations.
   - Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
   - Always use caution when installing or modifying telephone lines.
2. Connect the one end of the POTS line or analog extension to the RJ-11 remote access port on the XMU+.

POTS

Plain Old Telephone Service

3. Plug the RJ-11 Mating Connector (telephone jack) on the opposite end of the POTS line or analog extension into the vacant, active telephone outlet.
4. Configure the XMU+ to allow Remote Access. See *Understanding XMU+ Remote Telephone Access* on page 45.

Note: For a Master / Slave set-up, the Slave unit can use the same telephone line as the Master - but you must program the Slave not to answer until after 3 rings. Leave the Master unit set to answer after 1 ring.

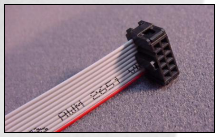
Connecting Alarms (optional)

The XMU+ ATIS provides two output alarm contacts and two input alarm contacts, all of which are accessed through the contact pinout on the Control card.

This alarm contact...	Is used to...	For more information...
Output 1	Trigger an external device (a light or a buzzer) in the event of a system failure, such as input power loss or microprocessor failure.	See *To wire the alarm connector* on page 26 for more information).
Output 2	Trigger an external device or monitor in the event that one of the two power supplies fails (this feature only on an XMU+ large chassis unit with a dual power supply).	See *To wire the alarm connector* on page 26 for more information).
Input 1	Connect the optional override switch feature. When connected to the XMU+, the override switch allows regular programming to be overridden by a pre-recorded message in case of an emergency.	See the XMUCOM+ application to program override messages.
Input 2	Reserved for future use.	Information not yet available for this future feature.

To wire the alarm connector

Alarm connections require the following:



Alarm Mating Connector

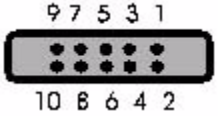
When the system is powered up and running normally, there is a closed circuit between the Common (C) and the Normally Closed (NC) contacts, and an open circuit between the Common (C) and the Normally Open (NO) contacts. In an alarm condition, the opposite occurs, with an open circuit between the (C) and the (NC) contacts, and a closed circuit between the (C) and the (NO) contacts.

1. Wire the connector pinouts on the alarm connector using the following table.

Pin...	Used for...	Pin...	Used for...
1	Alarm 1 Output (NC).	6	Alarm 1 Input.
2	Alarm 1 Output (NO).	7	Alarm 2 Output (NC).
3	Alarm 1 Output (C).	8	Alarm 2 Output (NO).
4	Alarm 2 Input.	9	Alarm 2 Output (C).
5	Alarm 1 Input.	10	Alarm 2 Input.

2. Connect the wires to the appropriate external device, such as a light or a buzzer.
3. Plug the alarm mating connector into the ALARM port on the XMU+ control card.

Alarm pin out on the XMU+ ATIS Control Card



Cabling XMU+ ATIS Line Cards

Wiring

Caution:

The ATIS Line Card requires the connection of a 1.5mm 2 / 14 AWG (minimum) protective earthing (equipotential bonding / ground) conductor to the 5mm PE terminal on the card's faceplate. This grounding arrangement must comply with local electrical code requirements.

Die ATIS Leitungskarte benötigt die Verbindung eines 1,5mm 2/14 AWG (amerikanische/britische Norm für Drahtquerschnitt) (Minimum) Schutzleiters (Potenzialausgleichsleiter / Erdleiter) zu dem 5mm PE (Schutzleiter) Anschluss auf der Karten-Bedienerplatte. Die Erdungsvorrichtung muss die Voraussetzungen der örtlichen elektrischen Richtlinien erfüllen.

When installing the ATIS line card, the protective earthing (equipotential bonding / ground) conductor must be connected before attaching the line interface connector which bears TNV (PSTN) circuits.

Bei Installation der ATIS Leitungskarte, muss der Schutzleiter (Potenzialausgleichsleiter / Erdleiter) angeschlossen sein, bevor der Leitungsanpassungsverbinder, welcher TNV* (PSTN**) Kreisläufe trägt, anbracht wird.

When removing the ATIS line card for service, the line interface connector which bears TNV (PSTN) circuits is to be removed before disconnecting the protective earthing (equipotential bonding / ground) conductor.

Wenn die ATIS Leitungskarte für Wartungsarbeiten entfernt wird, muss der Leitungsanpassungsverbinder; der TNV* (PSTN**) Kreisläufe trägt, entfernt werden, bevor man den Schutzleiter (Potenzialausgleichsleiter / Erdleiter) unterbricht.

* Telekom-Netz-Spannung** ˆffentliches gekoppeltes Telefonnetz

The following tables and diagrams show how to connect the XMU+ ATIS Line Card to an air/ground transmitter. Note that there are two ATIS product options. Option 1 has a phantom PTT output, while Option 2 has a PTT relay output. Within these two options the cards can be configured, by on-board jumper settings, to either accept an external voltage or generate their own internal voltage. These jumper settings are configured to the user's preference at the factory, or can be set / altered on site by a qualified technician. Note that lines 1 - 4 are nominally used to connect to transmitters but can be used for monitor / recorder outputs.

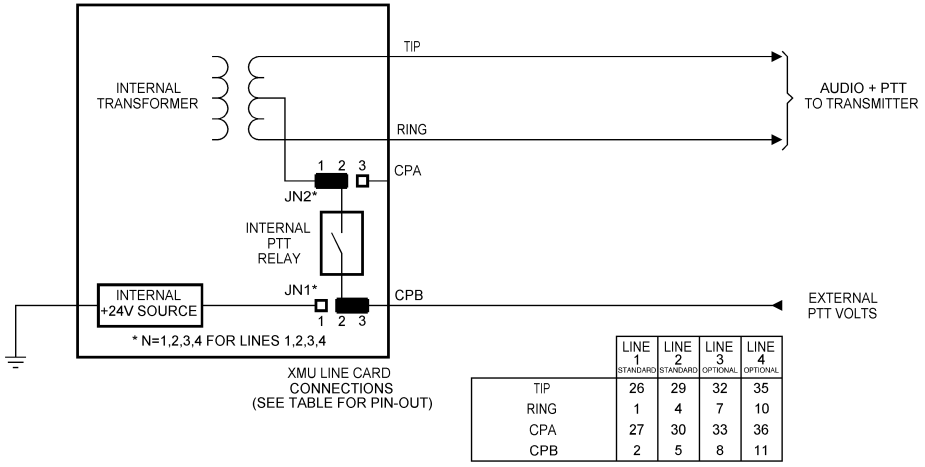
1) Phantom PTT With External Voltage

XMU+ Signal	Transmitter Signal	Transmitter Ports				Optional Telephone PortS			
		TX 1	TX 2	TX 3	TX 4				
		Line 1 Pin/ colour	Line 2 Pin/ colour	Line 3 Pin/ colour	Line 4 Pin/ colour	Line 5 Pin/ colour	Line 6 Pin/ colour	Line 7 Pin/ colour	Line 8 Pin/ colour
Tip	Transmit Audio 1	26 - Wht/ Blu	29 - Wht/ Brn	32 - Red/ Org	35 - Red/ Slt	38 - Blk/ Grn	41 - Yel/Blu	44 - Yel/ Brn	47 - Vlt/ Org
Ring	Transmit Audio 2	1 - Blu/ Wht	4 - Brn/ Wht	7 - Org/ Red	10 - Slt/ Red	13 - Grn/ Blk	16 - Blu/Yel	19 - Brn/ Yel	22 - Org/ Vlt
CPB	PTT Volts **55 VDC max**	2 - Org/ Wht	5 - Slt/ Wht	8 - Grn/ Red	11 - Blu/ Blk				

Note: Lines 5 - 8 are optional telephone ports

Jumper Name	Description for 1-2 Setting	Description for 2-3 Setting	Value That is Set on the Card
J11	Internal PTT Volts	External PTT Volts	2-3
J12	Phantom PTT	Separate PTT Output	1-2
J13 - Use Default	Phantom Input	Separate Input	2-3
J14 - Use Default	High Level Input	Low Level Input	2-3

Jumper Name	Description for 1-2 Setting	Description for 2-3 Setting	Value That is Set on the Card
J21	Internal PTT Volts	External PTT Volts	2-3
J22	Phantom PTT	Separate PTT Output	1-2
J23 - Use Default	Phantom Input	Separate Input	2-3
J24 - Use Default	High Level Input	Low Level Input	2-3
J31	Internal PTT Volts	External PTT Volts	2-3
J32	Phantom PTT	Separate PTT Output	1-2
J41	Internal PTT Volts	External PTT Volts	2-3
J42	Phantom PTT	Separate PTT Output	1-2
J43 - Use Default	Input Disabled	Separate Input	2-3
J50 - Use Default	DEFAULT	DO NOT USE	1-2
J60 - Use Default	DEFAULT	DO NOT USE	1-2
J70 - Use Default	DEFAULT	DO NOT USE	1-2
J80 - Use Default	DEFAULT	DO NOT USE	1-2



XMU+ ATIS / PHANTOM PTT / EXTERNAL PTT VOLTAGE

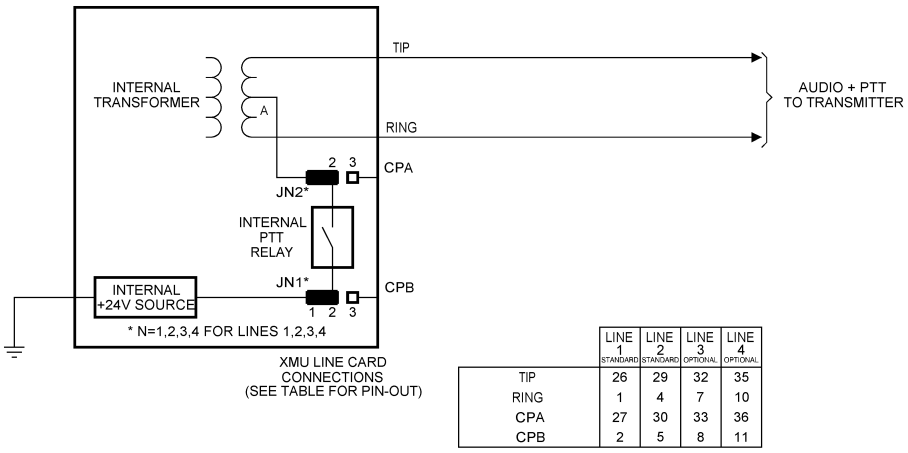
2) Phantom PTT With Internal Voltage

XMU+ Signal	Transmitter Signal	Transmitter Ports				Optional Telephone PortS			
		TX 1	TX 2	TX 3	TX 4				
		Line 1 Pin/ colour	Line 2 Pin/ colour	Line 3 Pin/ colour	Line 4 Pin/ colour	Line 5 Pin/ colour	Line 6 Pin/ colour	Line 7 Pin/ colour	Line 8 Pin/ colour
Tip	Transmit Audio 1	26 - Wht/ Blu	29 - Wht/ Brn	32 - Red/ Org	35 - Red/ Slt	38 - Blk/ Grn	41 - Yel/Blu	44 - Yel/ Brn	47 - Vlt/ Org
Ring	Transmit Audio 2	1 - Blu/ Wht	4 - Brn/ Wht	7 - Org/ Red	10 - Slt/ Red	13 - Grn/ Blk	16 - Blu/Yel	19 - Brn/ Yel	22 - Org/ Vlt

Note: Lines 5 - 8 are optional telephone ports

Jumper Name	Description for 1-2 Setting	Description for 2-3 Setting	Value That is Set on the Card
J11	Internal PTT Volts	External PTT Volts	1-2
J12	Phantom PTT	Separate PTT Output	1-2
J13 - Use Default	Phantom Input	Separate Input	2-3
J14 - Use Default	High Level Input	Low Level Input	2-3
J21	Internal PTT Volts	External PTT Volts	1-2
J22	Phantom PTT	Separate PTT Output	1-2
J23 - Use Default	Phantom Input	Separate Input	2-3
J24 - Use Default	High Level Input	Low Level Input	2-3
J31	Internal PTT Volts	External PTT Volts	1-2
J32	Phantom PTT	Separate PTT Output	1-2
J41	Internal PTT Volts	External PTT Volts	1-2
J42	Phantom PTT	Separate PTT Output	1-2
J43 - Use Default	Input Disabled	Separate Input	2-3

Jumper Name	Description for 1-2 Setting	Description for 2-3 Setting	Value That is Set on the Card
J50 - Use Default	DEFAULT	DO NOT USE	1-2
J60 - Use Default	DEFAULT	DO NOT USE	1-2
J70 - Use Default	DEFAULT	DO NOT USE	1-2
J80 - Use Default	DEFAULT	DO NOT USE	1-2



	LINE 1 STANDARD	LINE 2 STANDARD	LINE 3 OPTIONAL	LINE 4 OPTIONAL
TIP	26	29	32	35
RING	1	4	7	10
CPA	27	30	33	36
CPB	2	5	8	11

XMU+ ATIS / PHANTOM PTT / INTERNAL 24V

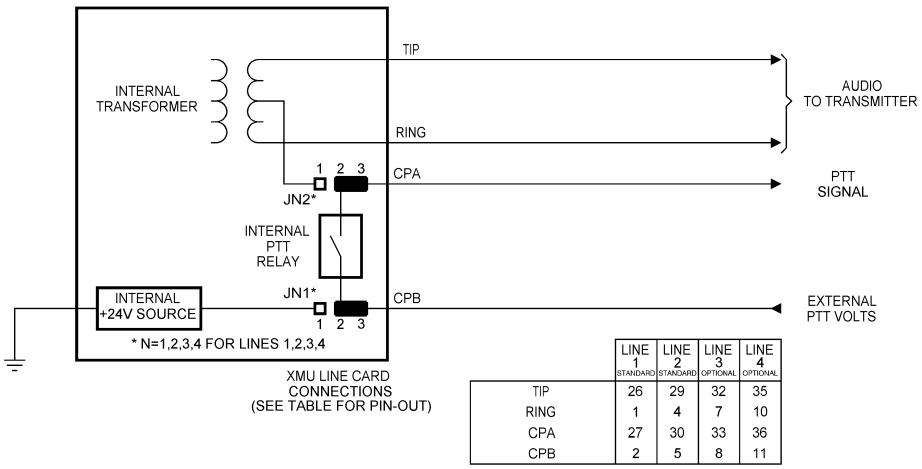
3) Relay Output PTT With External Voltage

XMU+ Signal	Transmitter Signal	Transmitter Ports				Optional Telephone Ports			
		TX 1	TX 2	TX 3	TX 4				
		Line 1 Pin/ colour	Line 2 Pin/ colour	Line 3 Pin/ colour	Line 4 Pin/ colour	Line 5 Pin/ colour	Line 6 Pin/ colour	Line 7 Pin/ colour	Line 8 Pin/ colour
Tip	Transmit Audio 1	26 - Wht/ Blu	29 - Wht/ Brn	32 - Red/ Org	35 - Red/Slt	38 - Blk/Grn	41 - Yel/ Blu	44 - Yel/ Brn	47 - Vlt/ Org
Ring	Transmit Audio 2	1 - Blu/ Wht	4 - Brn/ Wht	7 - Org/ Red	10 - Slt/ Red	13 - Grn/Blk	16 - Blu/Yel	19 - Brn/Yel	22 - Org/Vlt
CPA	PTT	27 - Wht/ Org	30 - Wht/ Slt	33 - Red/ Grn	36 - Blk/ Blu				
CPB	PTT Volts 55 VDC max	2 - Org/ Wht	5 - Slt/ Wht	8 - Grn/ Red	11 - Blu/Blk				

Note: Lines 5 - 8 are optional telephone ports. PTT output from CP1 pin can be used directly if transmitter type permits and phantom PTT is not required.

Jumper Name	Description for 1-2 Setting	Description for 2-3 Setting	Value That is Set on the Card
J11	Internal PTT Volts	External PTT Volts	2-3
J12	Phantom PTT	Separate PTT Output	2-3
J13 - Use Default	Phantom Input	Separate Input	2-3
J14 - Use Default	High Level Input	Low Level Input	2-3
J21	Internal PTT Volts	External PTT Volts	2-3
J22	Phantom PTT	Separate PTT Output	2-3
J23 - Use Default	Phantom Input	Separate Input	2-3
J24 - Use Default	High Level Input	Low Level Input	2-3
J31	Internal PTT Volts	External PTT Volts	2-3
J32	Phantom PTT	Separate PTT Output	2-3

Jumper Name	Description for 1-2 Setting	Description for 2-3 Setting	Value That is Set on the Card
J41	Internal PTT Volts	External PTT Volts	2-3
J42	Phantom PTT	Separate PTT Output	2-3
J43 - Use Default	Input Disabled	Separate Input	2-3
J50 - Use Default	DEFAULT	DO NOT USE	1-2
J60 - Use Default	DEFAULT	DO NOT USE	1-2
J70 - Use Default	DEFAULT	DO NOT USE	1-2
J80 - Use Default	DEFAULT	DO NOT USE	1-2



	LINE 1 STANDARD	LINE 2 STANDARD	LINE 3 OPTIONAL	LINE 4 OPTIONAL
TIP	26	29	32	35
RING	1	4	7	10
CPA	27	30	33	36
CPB	2	5	8	11

XMU+ ATIS / RELAY OUTPUT PTT / EXTERNAL PTT VOLTAGE

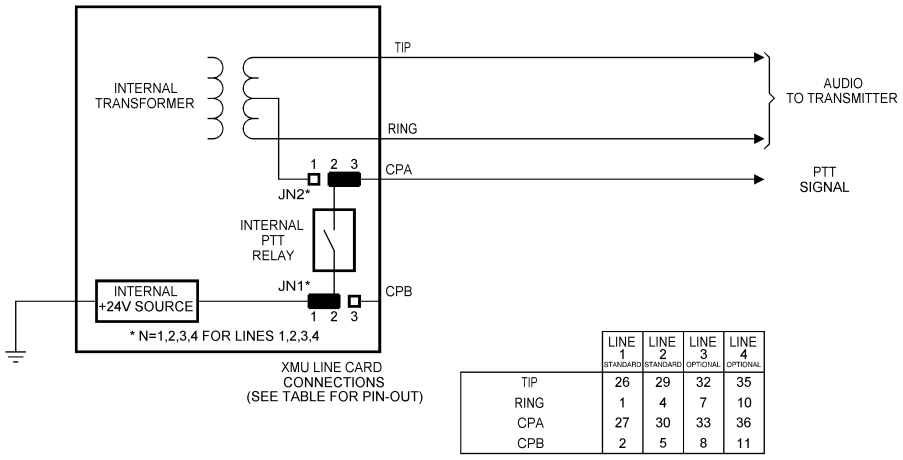
4) Relay Output PTT With Internal Voltage

XMU+ Signal	Transmitter Signal	Transmitter Ports				Optional Telephone Ports			
		TX 1	TX 2	TX 3	TX 4				
		Line 1 Pin/ colour	Line 2 Pin/ colour	Line 3 Pin/ colour	Line 4 Pin/ colour	Line 5 Pin/ colour	Line 6 Pin/ colour	Line 7 Pin/ colour	Line 8 Pin/ colour
Tip	Transmit Audio 1	26 - Wht/ Blu	29 - Wht/ Brn	32 - Red/ Org	35 - Red/Slt	38 - Blk/Grn	41 - Yel/ Blu	44 - Yel/ Brn	47 - Vlt/ Org
Ring	Transmit Audio 2	1 - Blu/ Wht	4 - Brn/ Wht	7 - Org/ Red	10 - Slt/ Red	13 - Grn/Blk	16 - Blu/Yel	19 - Brn/Yel	22 - Org/Vlt
CPA	PTT	27 - Wht/ Org	30 - Wht/ Slt	33 - Red/ Grn	36 - Blk/ Blu				

Note: Lines 5 - 8 are optional telephone ports. PTT output from CP1 pin can be used directly if transmitter type permits and phantom PTT is not required.

Jumper Name	Description for 1-2 Setting	Description for 2-3 Setting	Value That is Set on the Card
J11	Internal PTT Volts	External PTT Volts	1-2
J12	Phantom PTT	Separate PTT Output	2-3
J13 - Use Default	Phantom Input	Separate Input	2-3
J14 - Use Default	High Level Input	Low Level Input	2-3
J21	Internal PTT Volts	External PTT Volts	1-2
J22	Phantom PTT	Separate PTT Output	2-3
J23 - Use Default	Phantom Input	Separate Input	2-3
J24 - Use Default	High Level Input	Low Level Input	2-3
J31	Internal PTT Volts	External PTT Volts	1-2
J32	Phantom PTT	Separate PTT Output	2-3
J41	Internal PTT Volts	External PTT Volts	1-2

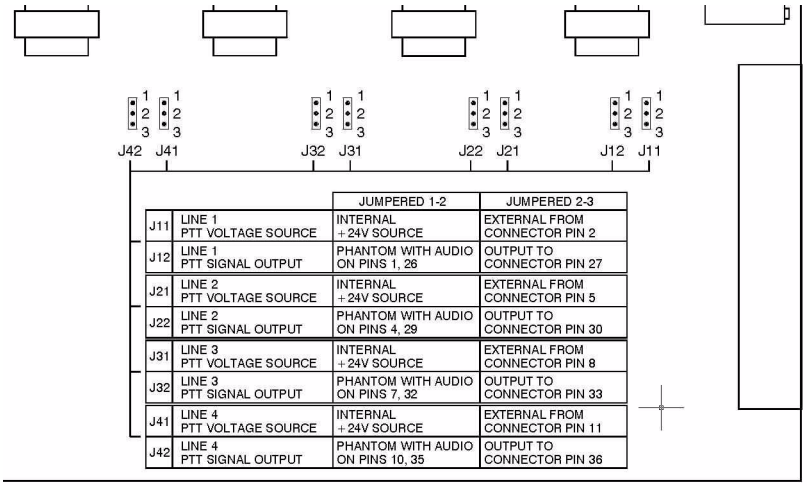
Jumper Name	Description for 1-2 Setting	Description for 2-3 Setting	Value That is Set on the Card
J42	Phantom PTT	Separate PTT Output	2-3
J43 - Use Default	Input Disabled	Separate Input	2-3
J50 - Use Default	DEFAULT	DO NOT USE	1-2
J60 - Use Default	DEFAULT	DO NOT USE	1-2
J70 - Use Default	DEFAULT	DO NOT USE	1-2
J80 - Use Default	DEFAULT	DO NOT USE	1-2



	LINE 1 STANDARD	LINE 2 STANDARD	LINE 3 OPTIONAL	LINE 4 OPTIONAL
TIP	26	29	32	35
RING	1	4	7	10
CPA	27	30	33	36
CPB	2	5	8	11

XMU+ ATIS / RELAY OUTPUT PTT / INTERNAL 24V

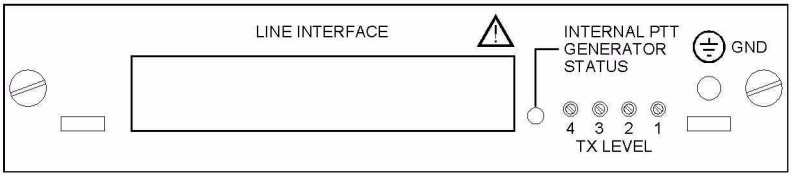
ATIS Line card jumper positions.



		JUMPERED 1-2	JUMPERED 2-3
J11	LINE 1 PTT VOLTAGE SOURCE	INTERNAL +24V SOURCE	EXTERNAL FROM CONNECTOR PIN 2
J12	LINE 1 PTT SIGNAL OUTPUT	PHANTOM WITH AUDIO ON PINS 1, 26	OUTPUT TO CONNECTOR PIN 27
J21	LINE 2 PTT VOLTAGE SOURCE	INTERNAL +24V SOURCE	EXTERNAL FROM CONNECTOR PIN 5
J22	LINE 2 PTT SIGNAL OUTPUT	PHANTOM WITH AUDIO ON PINS 4, 29	OUTPUT TO CONNECTOR PIN 30
J31	LINE 3 PTT VOLTAGE SOURCE	INTERNAL +24V SOURCE	EXTERNAL FROM CONNECTOR PIN 8
J32	LINE 3 PTT SIGNAL OUTPUT	PHANTOM WITH AUDIO ON PINS 7, 32	OUTPUT TO CONNECTOR PIN 33
J41	LINE 4 PTT VOLTAGE SOURCE	INTERNAL +24V SOURCE	EXTERNAL FROM CONNECTOR PIN 11
J42	LINE 4 PTT SIGNAL OUTPUT	PHANTOM WITH AUDIO ON PINS 10, 35	OUTPUT TO CONNECTOR PIN 36

XMU+ ATIS Line Card Face Plate.

The front of the ATIS line card has a standard Amphenol 50 pin connector (we recommend using a C157-32500 Amphenol with this connector) and four (4) output potentiometers. These 'pots' are used to adjust the transmitter output level from -10dBm to +2dBm depending on the user's requirements. The internal PTT generator status LED should be on and green to confirm the internal 24v source is available and working.



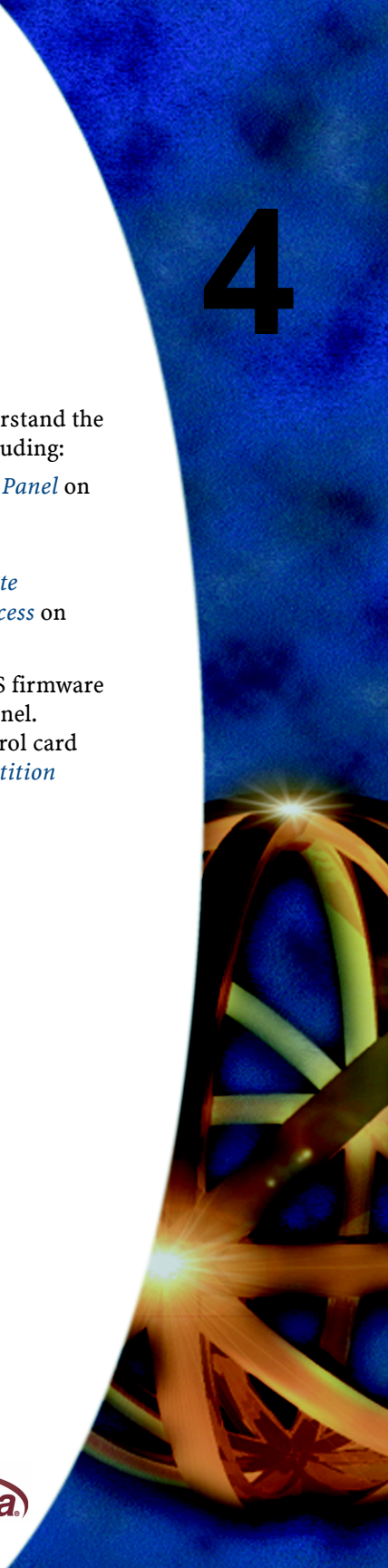
XMU+ ATIS Operation

4

In order to properly test XMU+ ATIS installation, you must understand the options XMU+ ATIS offers for navigation and configuration, including:

- The XMU+ Front Panel. See *Understanding the XMU+ Front Panel* on page 41.
- XMUCOM+ software. See the *XMU+ QuickStart Guide*.
- Remote XMU+ ATIS access. See *Understanding XMU+ Remote Telephone Access* on page 45 and *Using Remote Telephone Access* on page 47.

As well, you should gain a brief understanding of the XMU+ ATIS firmware hierarchy in order to easily navigate through the XMU+ Front Panel. Firmware is the software that is hard-coded into the XMU+ Control card and the various line cards. See *Node Menu Hierarchy - Single Partition Mode* on page 39.



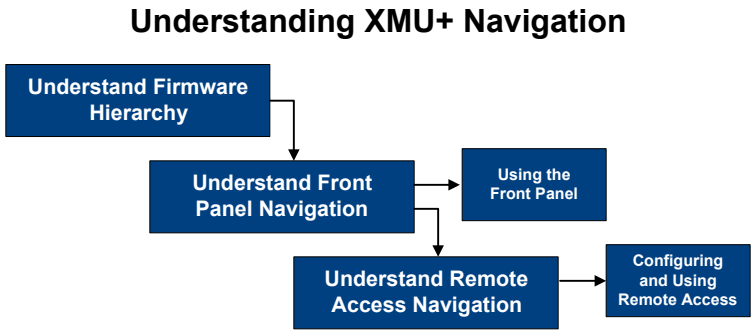
interalia

In this chapter...

- *XMU+ Navigation Activities* on page 39.
- *Node Menu Hierarchy - Single Partition Mode* on page 39.
- *Understanding the XMU+ Front Panel* on page 41.
- *Understanding XMU+ Remote Telephone Access* on page 45.

XMU+ Navigation Activities

Complete the following activities to understand XMU+ navigation and to prepare for setting up configurations:

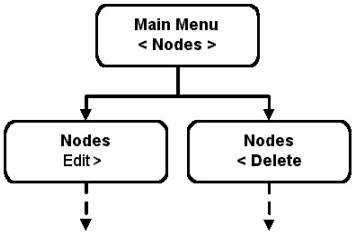


1. Understand the XMU+ hierarchy. See *Node Menu Hierarchy - Single Partition Mode* on page 39 for more information.
2. Understand Front Panel navigation, and learn to configure the XMU+ using the Front Panel. See the following for more information:
   - *Understanding the XMU+ Front Panel* on page 41.
   - *Using the Front Panel* on page 42
3. If required, configure the XMU+ to allow Remote Access and learn to navigate using Remote Access. See the following for more information
   - *Understanding XMU+ Remote Telephone Access* on page 45.
   - *Using Remote Telephone Access* on page 47.

Node Menu Hierarchy - Single Partition Mode

XMU+ configurations control the behavior and functionality of XMU+. Nodes are used to program and define these configuration files. Users can view information about each node by navigating through the node menu hierarchy. See *XMU+ QuickStart Guide* for more information about nodes.

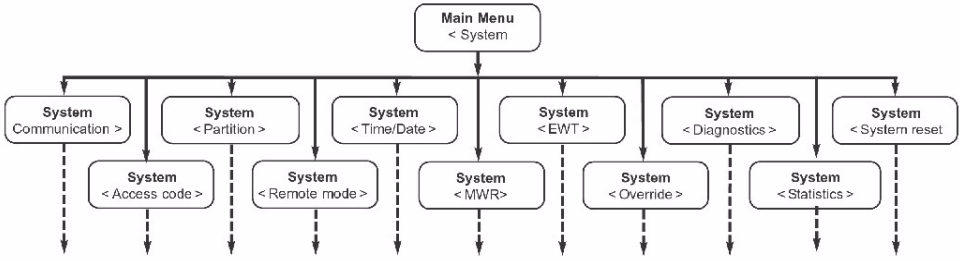
The following configuration structure represents the Front Panel node menu for the XMU+:



System Menu Hierarchy - Single Partition Mode

XMU+ system access codes, communication protocols, and system details and status can all be viewed by navigating through the card menu hierarchy on the Front Panel. However, XMUCOM+ also provides an easy-to-use interface for setting, changing, and viewing these parameters. See *XMU+ QuickStart Guide* for more information about system configuration.

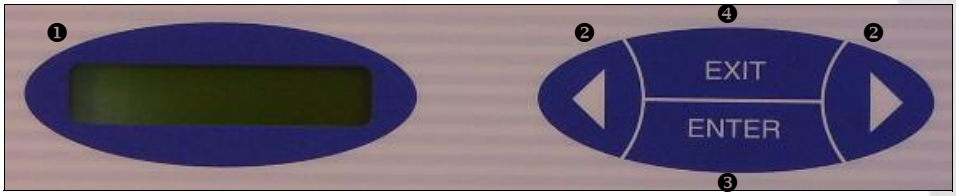
The following configuration structure represents the Front Panel system menu when the XMU+ is operating in Single Partition mode:



Understanding the XMU+ Front Panel

The XMU+ can be configured by using the four buttons and the LCD located on the Front Panel, as shown below.

The Front Panel buttons are used to navigate through the XMU+ configuration menu that is shown on the LCD (display). The menu is arranged in a top-down flow.



This feature...		Is used to...
❶	2 x 16 LCD character display	Display function information and line status to the user.
❷	Arrows	Navigate to the various XMU+ menu options.
❸	Enter	Select a menu option or to navigate to a deeper level of the menu.
❹	Exit	Navigate back up the menu.

Note: XMU+ can also be managed and configured with XMUCOM+ software. This software provides an intuitive, easy-to-use interface for designing and changing XMU+ configurations, and for completing XMU+ administrative functions. See the ***XMU+ QuickStart Guide*** for more information.

Using the Front Panel

The LCD (display) shows two 16-digit lines. The top line of the display shows the main program category, while the bottom line shows one of the possible selections in that category. An arrow (< or >) on the left or right edge of the display indicates that there is another possible selection in the direction shown.

For example, you are configuring message # 1 if you see the display to the right:

You have the following options in this case:

1. Access additional selections by pressing the right arrow button. There are no selections available by pressing the left arrow button.
2. Select the option that appears on the display (Play) by pressing the **Enter** button.
3. Exit this display by pressing the **Exit** button.

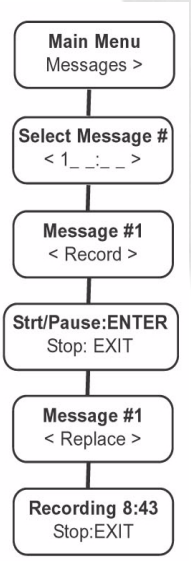
Certain menu items require the selection of a number, for example message index number, as shown in the display to the right:

You have the following options in this case:

1. Press the right arrow key to display the next message number.
2. Press the left arrow key to display the previous message number.
3. Press enter to select the current message.

To record a message

1. Connect a handset (included with the XMU+) or tapedeck to the XMU+ unit.
2. Press **Enter** to access the Main Menu.
3. Press **Enter** to select **Messages**.
4. Press the **Right Arrow** button until you reach the desired message number and press **Enter**.
5. Press the **Right Arrow** button until you reach **Record** and press **Enter**.
6. Press **Enter** (again) to begin recording your message. XMU+ monitors your recording time.
7. Press **Exit** to stop recording.
8. Press **Right Arrow** to reach **Replace** and press **Enter.**
9. Press **Exit** until the menu returns to the main display.

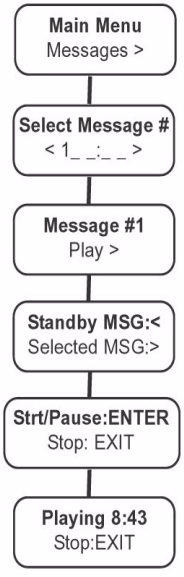


TIP...

To pause while recording, press **Enter**. To resume recording, press **Enter** again.

To play a message

1. Connect a handset (included with the XMU+) to the XMU+ unit.
2. Press **Enter** to access the Main Menu.
3. Press **Enter** to select **Messages**.
4. Press the **Right Arrow** button until you reach the desired message number and press **Enter**.
5. Press **Enter** to select **Play** on the menu.
6. Press the **Left Arrow** for **"Standby MSG"** or **Right Arrow** for **"Selected MSG."**
7. Press **Enter** (again) to play the message. XMU+ plays the message, counting-down the remaining playing time of the message.
8. Press **Exit** to stop playing (or allow the message to play itself out).
9. Press **Exit** until the menu returns to the main display.

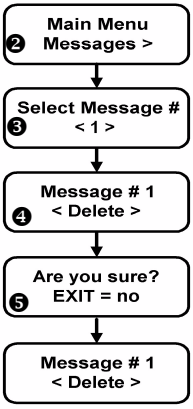


TIP...

To pause while playing, press **Enter**. To resume playing, press **Enter** again.

To delete a message

1. Press **Enter** to access the Main Menu.
2. Press **Enter** to select **Messages**.
3. Press the **Right Arrow** button until you reach the desired message number and press **Enter**.
4. Press the **Right Arrow** button until you reach **Delete** and press **Enter**.
   XMU+ displays a message asking if you are sure that you want to delete this message.
5. Press **Enter** to delete the message.
6. When XMU+ re-displays *Message # <Delete>*, press **Exit** until the menu returns to the main display.



Understanding XMU+ Remote Telephone Access

The Remote Access feature allows a programmer to access XMU+ from a remote location using a touch-tone telephone. The XMU+ ATIS Control Card can be configured for remote access through the telephone network (PSTN mode) or through direct connection to a standard telephone (Remote mode). For either of these modes operation is the same. When the programmer presses the touch-tone keys, the XMU+ receives a DTMF tone and responds with voice prompts that instruct the programmer on how to proceed.

When a user accesses the XMU+ remotely, the XMU+ responds immediately with a request for an access code. The manner in which the XMU+ responds from that point on depends on the access code entered.

Entering this access code...	Allows...	Specifications...
System	Administrators access to all levels of XMU+ features and options.	This number is unique from all other XMU+ access codes.
Message	Users access to specific messages in the XMU+. A message access code only allows changes to messages with that access code assigned to it. Each message in the XMU+ can be assigned an access code. If the user enters a message specific access code via remote access, then they do not have to enter the message number and # when using the record, play, or replace functions.	This code can be shared by one or more messages. Message access codes cannot be the same as the System access codes.

Setting Up XMU+ Remote Telephone Access

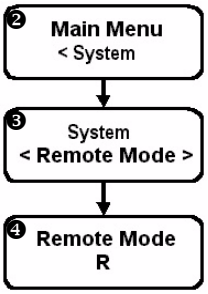
If Remote Access will be used to communicate with the XMU+, the unit must be:

1. Cabled to a telephone line.
2. Set XMU+ to Remote Access mode using the XMU+ Front Panel. See *To set XMU+ Remote Telephone Access mode* on page 46.
3. Programmed with a Remote Access code using the XMU+ Front Panel. (optional). See *To change the default Remote Telephone Access code* on page 46.

Note: Remote telephone access can also be used with a 'Ring Down' circuit

To set XMU+ Remote Telephone Access mode

Remote access mode is set to Ring Start (R) by default, and is rarely changed.

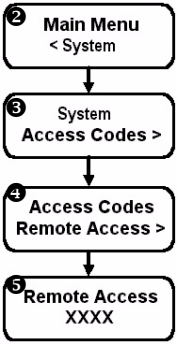


1. Press **Enter** to access the Main Menu.
2. Press the **Right Arrow** (three times) until you reach **System** on the Main Menu, and press **Enter**.
3. Press the **Right Arrow** until you reach **Remote Mode**, and press **Enter**.
4. Press the **Right Arrow** until you reach the desired remote mode, and press **Enter**. You can choose from the following options:
   - R - Ring start with loop/shunt disconnect (default).
   - RD - Ring start with DTMF disconnect.
   - RB - Ring start with busy tone disconnect.
   - RT - Ring start with dial tone disconnect.
   - RQ - Ring start with quick answer.
5. Press **Exit** until the menu returns to the main display.

To change the default Remote Telephone Access code

Assigning a new, unique access code to each XMU+ is recommended to prevent unauthorized telephone access to your system.

If multi-partitioning is enabled, a unique Remote Access code is required for each partition in addition to the System code. See on page 44 and the *XMU+ QuickStart Guide* for more information about multiple access codes.



1. Press **Enter** to access the Main Menu.
2. Press the **Right Arrow** (three times) until you reach **System** on the Main Menu, and press **Enter**.
3. H**it the right arrow key** and **Enter** to select **Access Codes**.
4. Press **Enter** to select **Remote Access**.
5. Press **Enter** to select the first digit in the existing access code.
6. Use the **Right Arrow** or **Left Arrow** to select a new Remote Access code digit, and press Enter.
7. Repeat Step 6 until the new access code is entered.
   Access codes must have a minimum of 4 and a maximum of 8 digits.
8. Press **Exit** until the menu returns to the main display.

Using Remote Telephone Access

There are many reasons to use Remote Telephone Access on the XMU+, including:

- Ease of use by users who are accustomed to making touch-tone keypad commands.
- Crisp, clear messages, since the background noise from other equipment in a COMS room is eliminated.
- Access to the XMU+ from any location.

Every remote access session starts with the user entering a Remote Access security code. See *Understanding XMU+ Remote Telephone Access* on page 45 for more information about Remote Telephone Access codes.

Once the code has been verified by XMU+, the various activities listed on the next page can be completed by entering the appropriate remote telephone access command. There are two ways to enter remote telephone access commands - Interactive and Direct.

With this Type of Command...	The user enters...	For example, to play a message...
Interactive	A single digit command, immediately followed by #. Pressing # indicates the end of a command to the XMU+. If required, the system then prompts the user to the next step or option, where they again enter the command and #.	Enter 8#. The XMU+ then prompts Enter Message Number. Enter the *nnn* # (where *nnn* is the message number). The XMU+ then prompts the user to the next step or option. The XMU+ will give the user 10 seconds to enter the message number.
Direct	A multi-level command, immediately followed by #. The direct entry method allows advanced users to enter commands quickly, without waiting for a prompt from the XMU+. Pressing # indicates the end of a command to the XMU+.	Enter 8 *nnn* # (where *nnn* is the message number.) The XMU+ then prompts the user to the next step or option.

Note: Once a digit is pressed, additional digits must be entered within 2 seconds, or the XMU+ will automatically terminate the entry.
Pressing # at any time during an entry will terminate the entry.

Remote Telephone Access Commands

This table outlines the different functions that can be executed on the XMU+ ATIS using the Remote Access Port on the control card.

TIP...

To cancel the delete command and return to the previous menu, press **Exit** when XMU+ asks *Are you sure?*.

Command	Remote Access Protocol
Change access code for message # xxx	1xxx#
Change system access code	10#
Change language prompt to English	401#
Change language prompt to French	402#
Change language prompt to Spanish	403#
Change language prompt to German	404#
Change language prompt to Portuguese	405#
Get unit type / S/W version	499#
Monitor Transmitter (Card / Line)	68xy#
Record Message #xxx	7xxx#
Play Message #xxx	8xxx#
Replace Message #xxx (with message #0)	9xxx#
Disconnect	0#
Terminate / Restart (ask for new password)	000 (Remote Telephone Access only)

Note: nnn = partition, message, or access code number
x = card number, y = line number, z = language number
* = only available with partitioning enabled
** = only available with partitioning disabled
+ = Message number '0' is a temporary message (Standby Message), which can be recorded and played without affecting any other messages. When the user decides that the temporary message is recorded properly, they can replace any message in the XMU+ with the temporary message. When the user disconnects, the temporary message is automatically erased.

Working with Remote Telephone Access Messages

Users wanting to add, remove, or change a message remotely must have a good understanding of the configuration and messages in the XMU+. The user must also know the message number associated with each message they want to work with. This information is collected during configuration design and implementation. See the *XMU+ QuickStart Guide* for more information about messages.

To remotely access the XMU+

1. Dial the Remote Access telephone number, or lift the handset on a ring down circuit. When the XMU+ answers the line, it responds Enter Access Code.
2. Enter the appropriate Remote Access code, followed by **#**.
   The access code entered determines the functions and options that the user is allowed access to. See *Understanding XMU+ Remote Telephone Access* on page 45.
   The XMU+ responds Enter Command.
3. Enter the command number (see *Remote Telephone Access Commands* on page 48), and follow the XMU+ responses until the desired command has been completed.

Note: If an invalid command or message number is selected, the XMU+ responds with the following message:
Error - Invalid Command or ***Error - No or Invalid Message***.

To disconnect from the XMU+

1. Complete the command.
2. Press **0**, followed by **#**.
   The XMU+ responds Done, and disconnects the line.

Note: If a remote command is not received within 30 seconds, the XMU+ automatically disconnects from the line.

To record a message remotely

1. Determine the number of the message you want to record.
2. Remotely access the XMU+. See *Working with Remote Telephone Access Messages* on page 49 for more information.
3. When the XMU+ responds Enter Command, press **7**.
4. Press the message number (nnn) you want to record, followed by **#**.
5. When the XMU+ responds with a short beep, record the message.
6. Press **#** to stop recording.
   The XMU+ responds with Message 'nnn' recorded.

To play a message remotely

1. Determine the number of the message you want to play.
2. Remotely access the XMU+.
   See *Working with Remote Telephone Access Messages* on page 49 for more information.
3. When the XMU+ responds Enter Command, press **8**.
4. Press the message number (nnn) you want to play, followed by **#**.
   XMU+ plays the message.
5. Press **#** to stop playing the message.

To delete a message remotely

TIP...

To cancel the delete command, hang up before you reach Step 3.

1. Determine the number of the message you want to delete.
2. Remotely access the XMU+.
   See *Working with Remote Telephone Access Messages* on page 49 for more information.
3. When the XMU+ responds Enter Command, press **39**.
4. Press the message number (nnn) you want to delete, followed by **#**.
5. The XMU+ will respond with a verbal confirmation 'done'.

To change default language of operation (optional)

When the XMU+ is accessed remotely, the first response it gives is always in English (Enter Access Code). The language it responds with from that point is also English, unless the language of operation is changed to French, Spanish, German, or Portuguese.

With single or multi-partitioned XMU+ units, each partition can be programmed to respond with a different language.

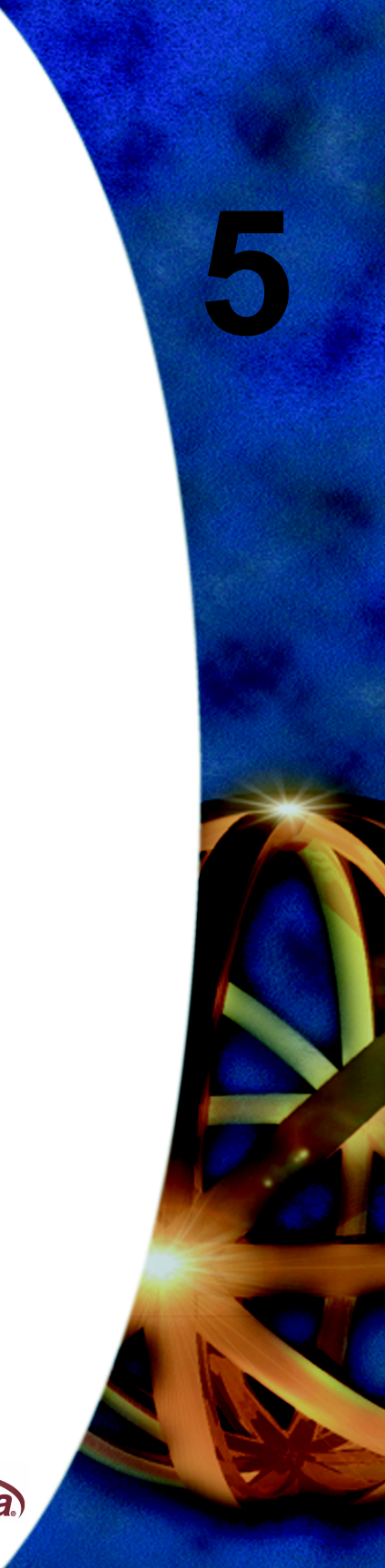
1. Remotely access the XMU+. See *Working with Remote Telephone Access Messages* on page 49 for more information.
2. When the XMU+ responds Enter Command, press **4**.
3. Press the number for the language you want to use, followed by **#**:
   - Press **1 #** for English (default).
   - Press **2 #** for French.
   - Press **3 #** for Spanish.
   - Press 4 # for German.
   - Press 5 # for Portuguese.

   The XMU+ will now use the selected language as its default language of operation for Remote Access.

5 Step by Step Example

In this chapter...

- *Create an ATIS Application* on page 55
- *Card Configuration* on page 58
- *Send the Configuration the XMU+* on page 61



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XMU+ ATIS Configuration

How to guide.....

This chapter is to aid in your understanding of how to set up an ATIS application on your XMU+ unit using XMUCOM+ administration software. Full XMU+ instructional manuals can be found on the CD included in your shipment.

The following is a step by step guide to creating an ATIS configuration using XMUCOM+ software, then transferring that configuration to the XMU+ unit.

Suggested message script for this ATIS example:-

Msg1 - ATIS message in English.

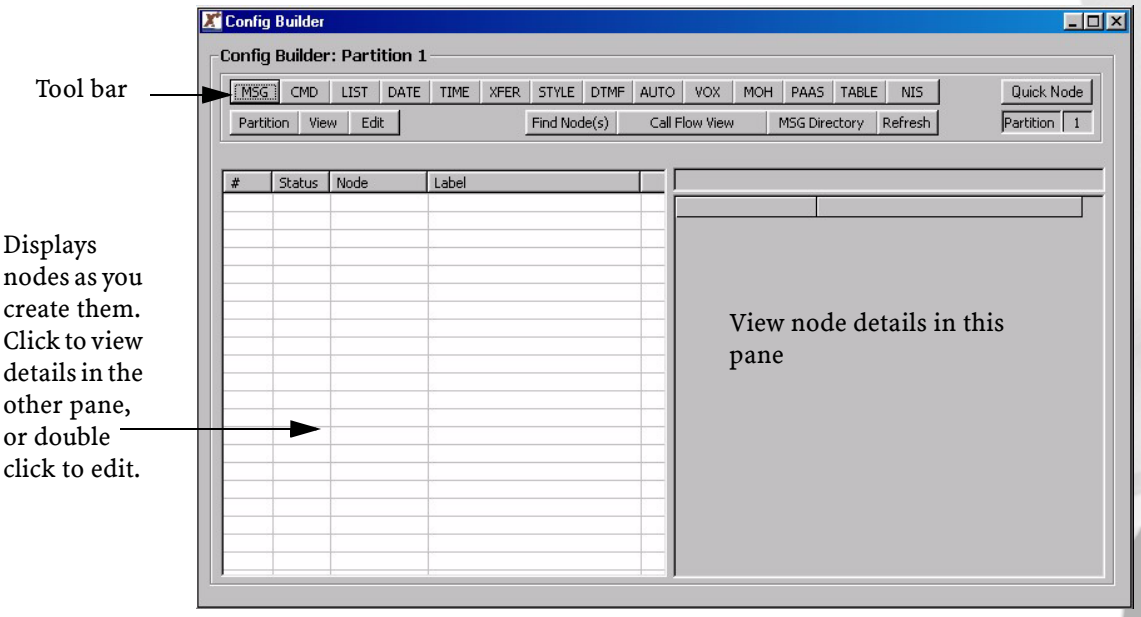
Msg2 - ATIS message in second language e.g. Spanish.

Msg3 - Other messages (if applicable.)

Create an ATIS Application

First double click the XMUCOM+ icon on you desktop or select XMUCOM+ from your Windows Start menu. Then click

- File, New



This window is divided into two large panes and a tool bar. The tool bar across the top has a number of buttons (MSG, CMD, LIST etc.) which are referred to as 'nodes.' The nodes are used in various combinations to create a 'configuration.' The configuration is sent to the XMU+ along with audio files (.wav files) and is the program that instructs the XMU+ how to behave.

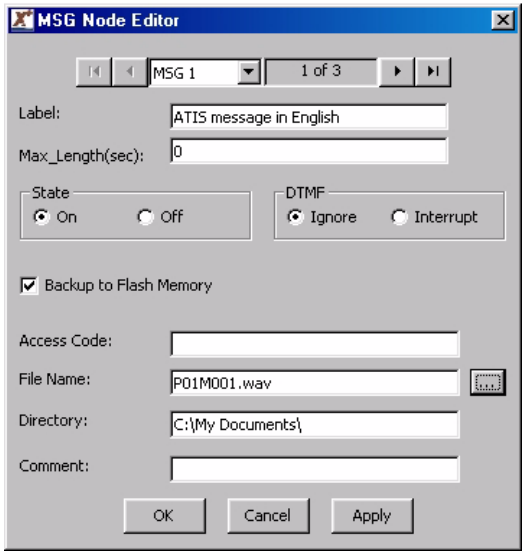
To create a node for the configuration you simply click on the relevant button in the tool bar and the node will appear in the left hand pane. The details of that node will appear in the right hand pane. When you have multiple nodes in the left hand pane, you can click on any one to view its details in the right hand pane, or double click on one to edit those details.

First we need to create and label the messages used by the ATIS application. Click the MSG button in the Config Builder window three (3) times to create three Message nodes. Double click on MSG node one (1) in the upper left hand pane to open the MSG Node Editor window and edit the attributes of that message. Use the scroll buttons at the top of the MSG node editor window to edit MSG nodes two and three.

- Msg 1 - ATIS message in English
- Msg 2 - ATIS message in Spanish
- Msg 3 - Other message if applicable

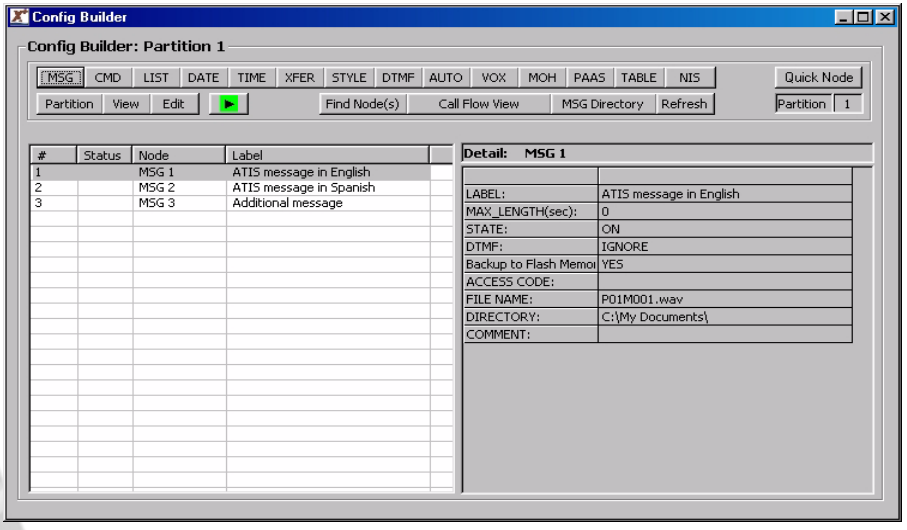
Edit and label MSG nodes

Next we'll 'map' the message nodes to the audio files which should be stored on your hard drive or network. To do this simply click on the box to the right of the "File Name" field in the MSG Node Editor window, then browse to where the audio file for the message is stored. Select the .wav file and click 'open.'



Note: If you do not have the audio files on your computer, you can record the messages directly onto the XMU+ via the remote telephone access port or using Message Manager. You can also use the handset & front panel.

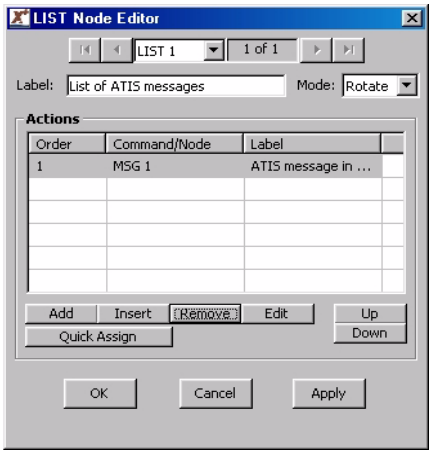
Once you have edited the MSG nodes, your Config Builder window should look like this.



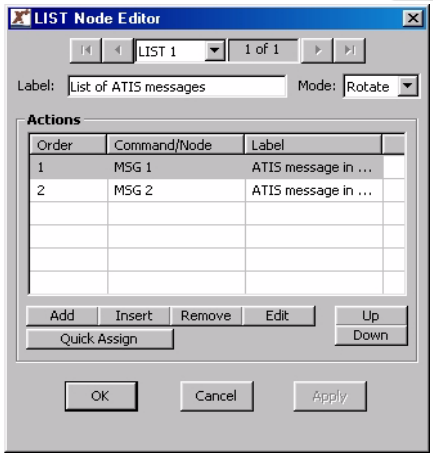
Create LIST Node

In an ATIS application we require a LIST node into which the MSG nodes will be referenced. Click on the LIST button in the Config Builder window and create a LIST node, then double click on that node to edit it. The following three screenshots show a LIST node which contain a single message, dual language messages, and multiple messages. Use whichever one is suitable for your application.

LIST node with single message.



LIST node with dual language message.

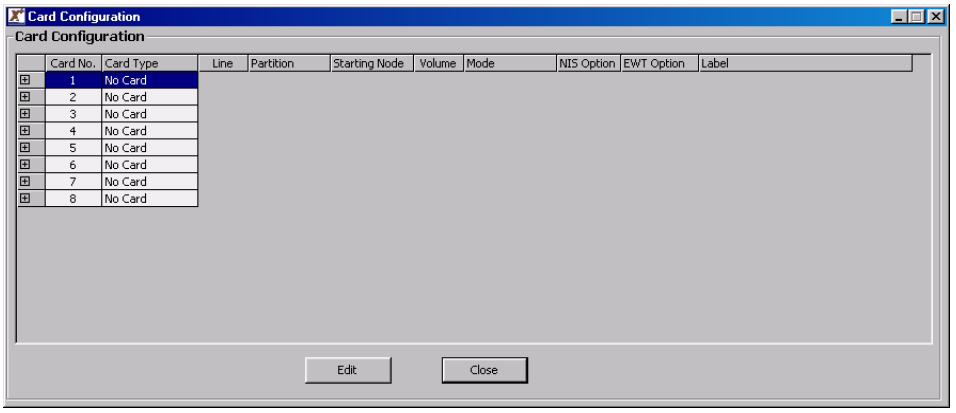


LIST node with dual language message.

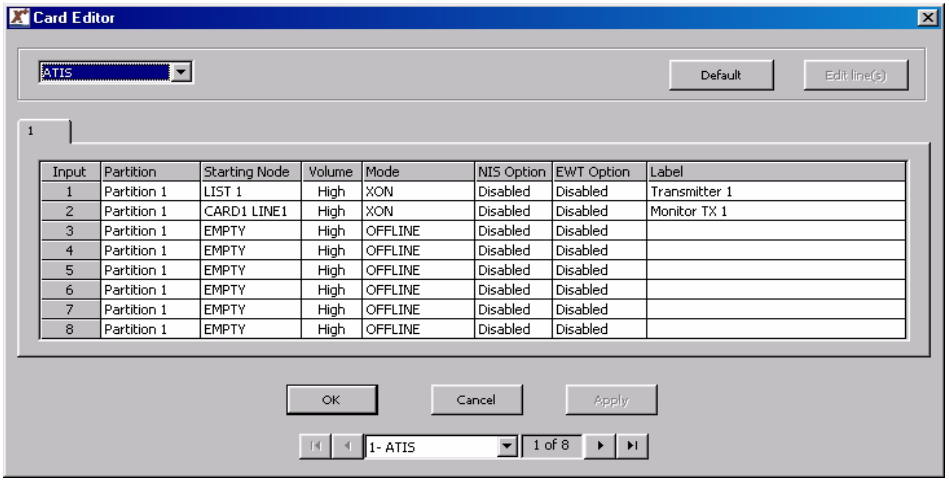
Note: To add messages to the LIST node, click on the 'add' button, then click the 'edit' button to change it to MSG 2, MSG 3, etc. The label field will automatically complete with the same label you gave to the MSG node - after you have saved your changes.

Card Configuration

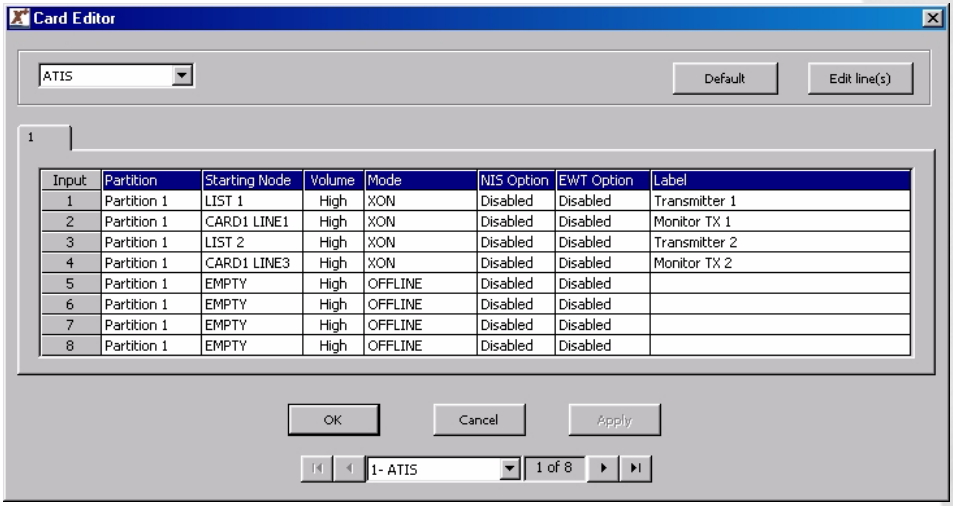
Now we have created the configuration, we need to tell the XMU+ which of its line cards and which ports on that line card to run this configuration on. Here we are going to use Card one, ports 1 through 8. In the menu bar at the top of your screen, click on Configuration, Card Configuration. The following window will open.



Next double-click on Card One to open the Card Editor window. Select 'ATIS' from the drop down box in the top left hand corner, then configure this window as shown in the screen-shot below.

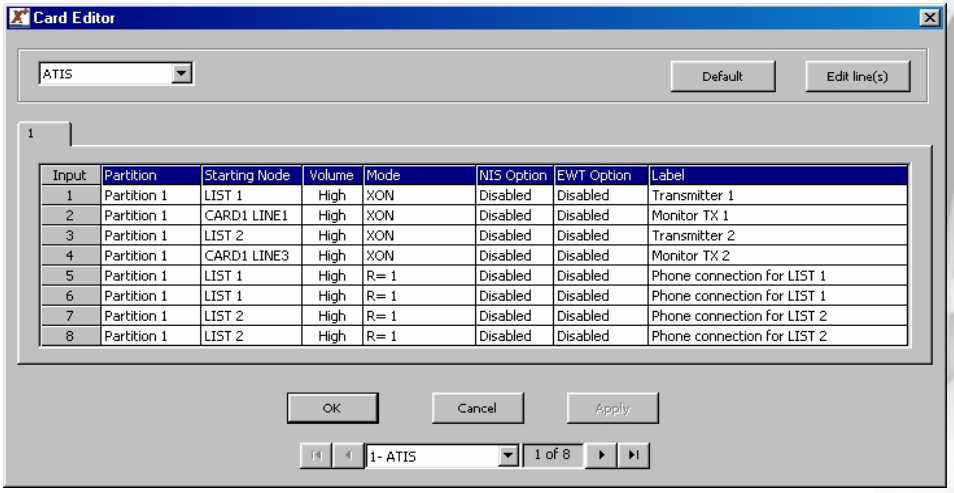


The following screen-shot is just an example to show how you'd configure this window if you wanted to play messages to two transmitters. You would of course also have to add the second LIST node and applicable messages to the configuration.

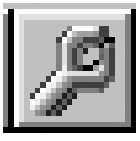


Input	Partition	Starting Node	Volume	Mode	NIS Option	EWT Option	Label
1	Partition 1	LIST 1	High	XON	Disabled	Disabled	Transmitter 1
2	Partition 1	CARD1 LINE1	High	XON	Disabled	Disabled	Monitor TX 1
3	Partition 1	LIST 2	High	XON	Disabled	Disabled	Transmitter 2
4	Partition 1	CARD1 LINE3	High	XON	Disabled	Disabled	Monitor TX 2
5	Partition 1	EMPTY	High	OFFLINE	Disabled	Disabled	
6	Partition 1	EMPTY	High	OFFLINE	Disabled	Disabled	
7	Partition 1	EMPTY	High	OFFLINE	Disabled	Disabled	
8	Partition 1	EMPTY	High	OFFLINE	Disabled	Disabled	

This screen-shot shows an example of how to configure this window if you also wanted to connect telephones lines to the XMU+ so that callers could also hear the ATIS messages.

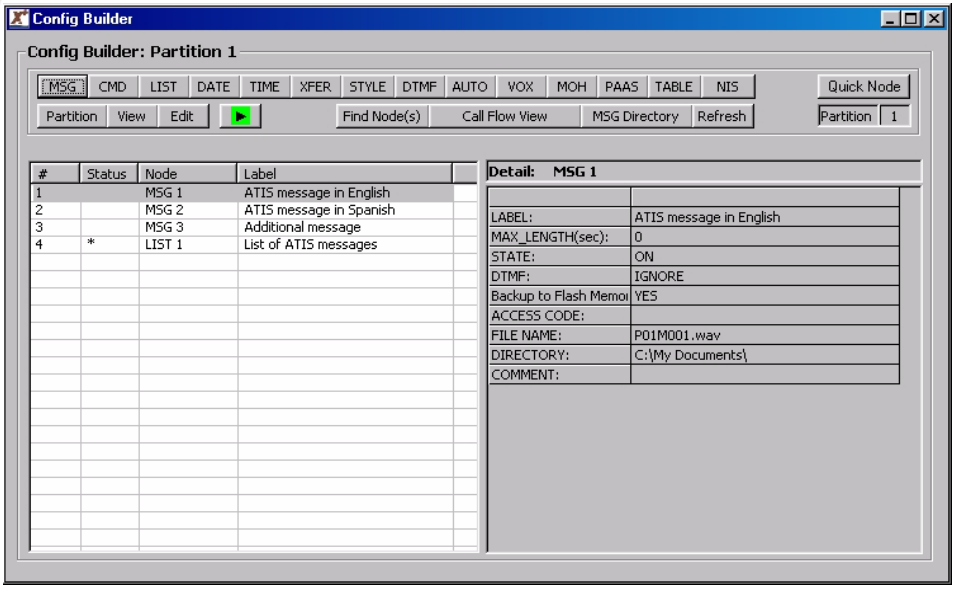


Input	Partition	Starting Node	Volume	Mode	NIS Option	EWT Option	Label
1	Partition 1	LIST 1	High	XON	Disabled	Disabled	Transmitter 1
2	Partition 1	CARD1 LINE1	High	XON	Disabled	Disabled	Monitor TX 1
3	Partition 1	LIST 2	High	XON	Disabled	Disabled	Transmitter 2
4	Partition 1	CARD1 LINE3	High	XON	Disabled	Disabled	Monitor TX 2
5	Partition 1	LIST 1	High	R= 1	Disabled	Disabled	Phone connection for LIST 1
6	Partition 1	LIST 1	High	R= 1	Disabled	Disabled	Phone connection for LIST 1
7	Partition 1	LIST 2	High	R= 1	Disabled	Disabled	Phone connection for LIST 2
8	Partition 1	LIST 2	High	R= 1	Disabled	Disabled	Phone connection for LIST 2



Note: If the Config Builder window should disappear from view, simply click on the Configuration Builder button near the top of your XMUCOM+ window.

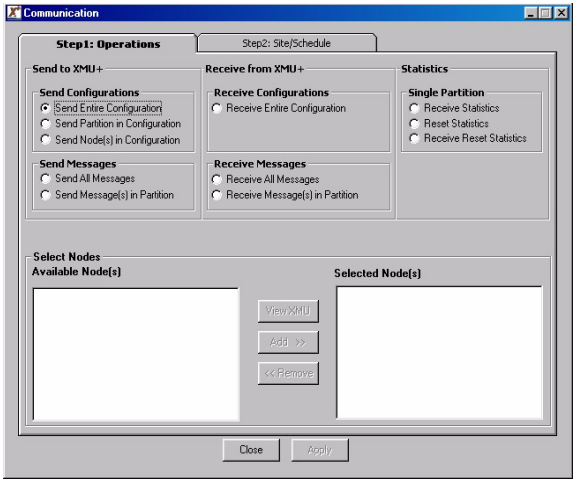
We have now created all the nodes and your config builder should look like this.



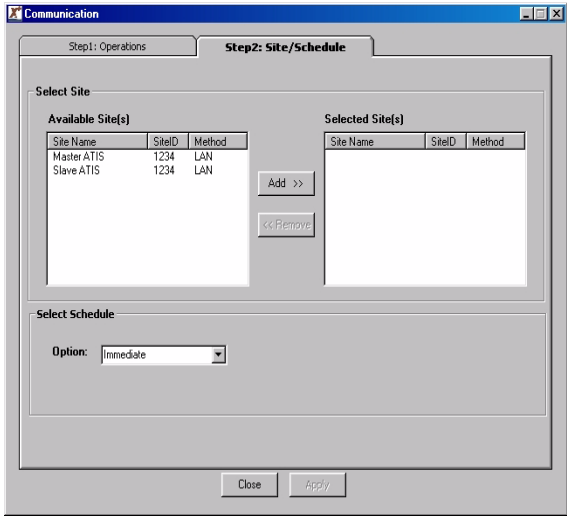
The configuration is complete. The Config Builder window displays all the nodes we have created, their labels if we entered them, and the details of the highlighted nodes in the right hand pane of this window. If you highlight a MSG node you can listen to the audio file by clicking on the green button in the tool bar. This is a ‘play’ button.

Send the Configuration the XMU+

All that's left is to send the configuration and the messages to the XMU+. First save the configuration on your hard drive or network using File, Save as. Now from the menu bar at the top of your XMUCOM+ screen, click on Communication, Communicate. The following window will open.



In the screen shot above you can see we have selected "Send entire Configuration." Next we need to tell XMUCOM+ where to send it. Click on the "Step 2: Site/Schedule" tab to show the following screen.



Next highlight the site you wish to send the configuration to by clicking on it. Then click the add button. Now click the Apply button and XMUCOM+ will send the configuration to the selected XMU+ site. Finally you'll need to repeat the last two steps, but instead of "Send Entire Configuration," you now need to select "Send All Messages."

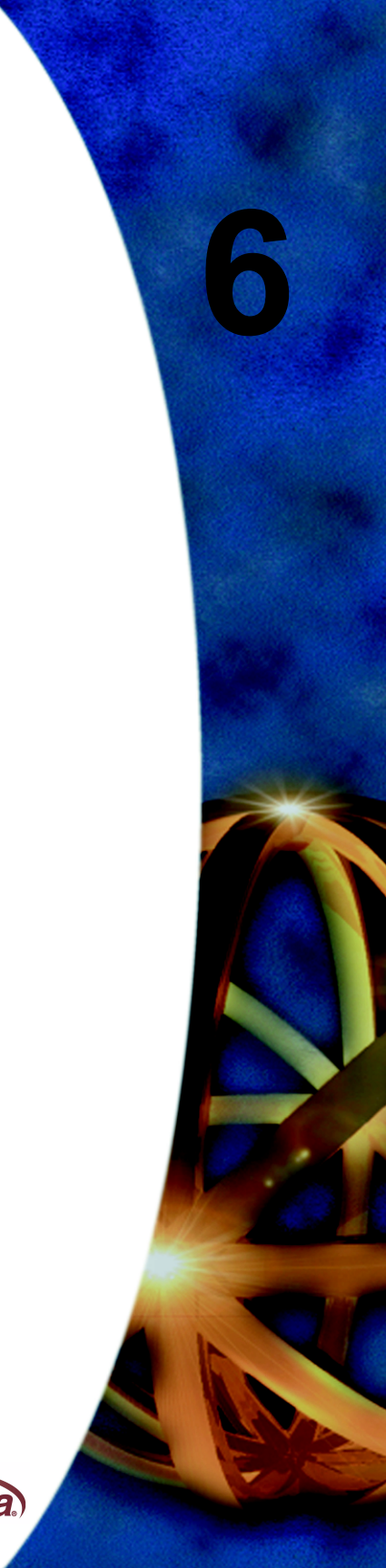
Note: To add 'sites' to your site book, click on Communicate, Site Book. In the window that opens, click 'New' and enter the relevant information.

Your XMU+ is now configured for ATIS operation.

6 Hot Standby System

In this chapter...

- *Hot Standby System* on page 64



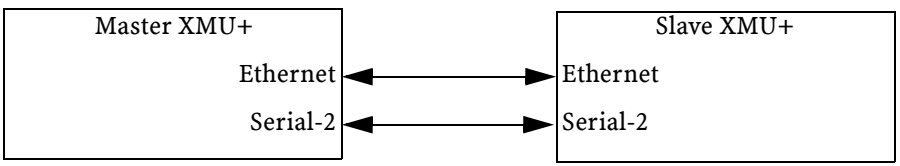
Hot Standby System

If the broadcast messages are deemed 'critical' the XMU+ ATIS can have a 'hot' standby, or redundant system ready to automatically changeover to in the event of a failure on the master system. This section describes the ATIS standby operation on XMU+ transmitter channels.

The standby operation allows two XMU+ units to be configured as a master / slave pair such that if the master unit fails, the slave will resume operation. In addition, any messages that are updated on the master unit will automatically be transferred to the slave unit so that the messages are always synchronized.

Setup

The system is typically setup as shown below. There are two XMU+s configured as a pair with one designated as the master and one designated as the slave. Communication between the units is accomplished via a crossover Ethernet cable and a crossover serial cable. Each unit is given a distinct IP address and is programmed with the address of the corresponding unit. The backup link is enabled (over the serial link) in case the primary Ethernet link ever fails.



Communications Setting

IP Address = 192.168.1.2
IP Netmask = 255.255.255.0
IP Gateway = 192.168.1.1

IP Address = 192.168.1.3
IP Netmask = 255.255.255.0
IP Gateway = 192.168.1.1

Standby Settings

Standby Mode = Master
Standby Partition = 1
Remote IP Address = 192.168.1.3
Backup Link = Enabled

Standby Mode = Slave
Standby Partition = 1
Remote IP Address = 192.168.1.2
Backup Link = Enabled

If the Ethernet port is also required for XMUCOM+ access, the Ethernet crossover cable may be replaced by a standard Ethernet hub or switch. The network administrator must assign unique static IP addresses to each of the units (DHCP is not supported).

There are four configurable parameters for standby operation namely standby mode, partition, remote IP address, and backup link. The meaning of each of these parameters is shown below.

Standby Mode - The mode determines what role this unit will play in the master / slave pair. When the mode is set to “Disabled”, the unit acts as standalone XMU+ (normal operation). This is the default mode of operation for all XMU+s. To enable standby operation, change the mode to Master or Slave.

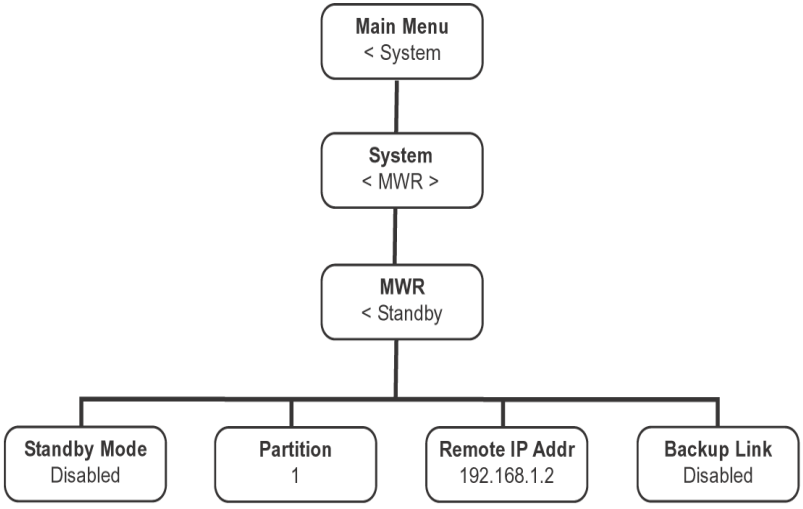
Partition - Select the partition which will be synchronized. By default, the XMU+ has only one partition and that partition is 1. If multiple partitions are enabled, choose which partition to use.

Remote IP Address - This should be set to the IP address of the other unit in the pair.

Backup Link - If a secondary communications link is required for additional redundancy between the pair, a serial crossover cable may be added between the units. Set this option to “Enabled” if this is required.

Front Panel Configuration

The configuration for standby operation is contained in the system menu of the front panel. The menu tree for standby configuration is:



Normal Operation

Booting: In order to boot the system, turn on the master and the slave at the same time. If the units are booted more than 60 seconds apart, a failure will be detected during boot. To avoid this failure from occurring, start the units at the same time. The units will automatically synchronize all of their messages during boot.

Updating Messages: All message updates should be done on the master unit. This applies to front panel, remote, and XMUCOM+ message downloads. When the master unit receives a new message, it automatically updates the same message on the slave unit. It is important to note that a message recorded on the slave will NOT be transferred to the master (see exception below in Master Failure).

Failure Operation and Recovery

Master failure:

In the event that the master unit fails, the slave unit becomes active. The slave unit will be fully functional including the ability to record new messages. When the master unit is repaired and brought back into service, the master will download all of the latest messages from the slave. When the synchronization has completed, the master will become active and the slave will revert to a standby state. All messages should again be recorded on the master unit.

Slave failure:

In the event that the slave fails, the master will continue normal operation. When the slave unit is repaired and brought back into service, the master will download all of the latest messages to the slave automatically.

Ethernet cable failure:

In the event of an Ethernet cable failure, the units will continue operating normally via the serial communications link. Any messages recorded on the master cannot be sent to the slave until the Ethernet cable is repaired. When the cable is repaired, all messages will then be synchronized.

Serial cable failure:

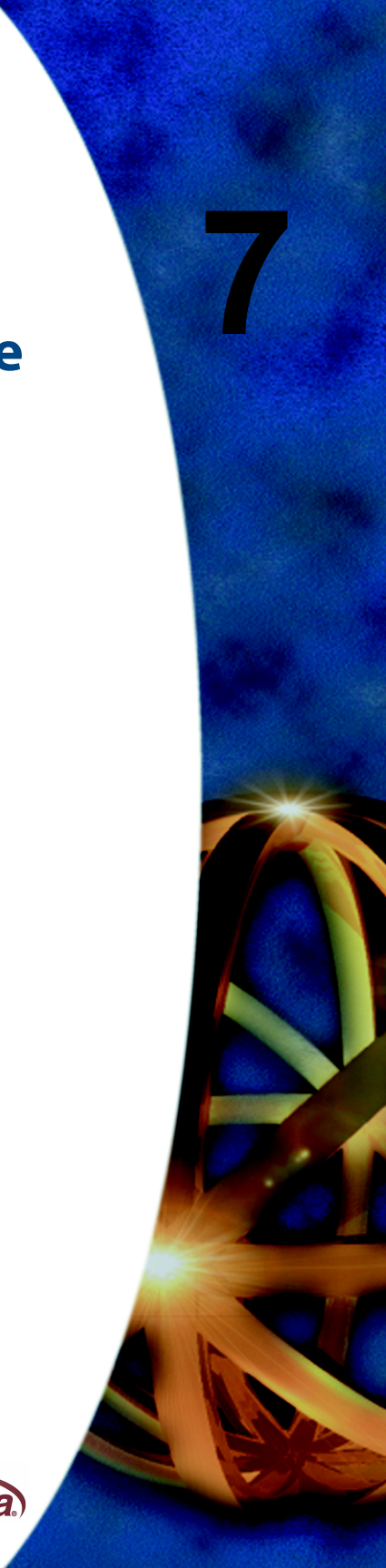
In the event of a serial cable failure, the units will continue operating normally.

ATIS error codes:

Failure Standby Unit - If this is the master, the slave has failed. And vice versa.
Failure Pri Standby Link - The Ethernet link is down.
Failure Bak Standby Link - The Serial link is down.
Failure Standby Sync - A message on the master could not be sent to the slave.

Standard 50-Pin Telecommunication Cable

Pin Number	Main Colour	Stripe Colour
1	blue	white
2	orange	white
3	green	white
4	brown	white
5	slate	white
6	blue	red
7	orange	red
8	green	red
9	brown	red
10	slate	red
11	blue	black
12	orange	black
13	green	black
14	brown	black
15	slate	black
16	blue	yellow
17	orange	yellow
18	green	yellow



Standard 50-Pin Telecommunication Cable

Pin Number	Main Colour	Stripe Colour
19	brown	yellow
20	slate	yellow
21	blue	violet
22	orange	violet
23	green	violet
24	brown	violet
25	slate	violet
26	white	blue
27	white	orange
28	white	green
29	white	brown
30	white	slate
31	red	blue
32	red	orange
33	red	green
34	red	brown
35	red	slate
36	black	blue
37	black	orange
38	black	green
39	black	brown
40	black	slate
41	yellow	blue
42	yellow	orange
43	yellow	green
44	yellow	brown
45	yellow	slate

Pin Number	Main Colour	Stripe Colour
46	violet	blue
47	violet	orange
48	violet	green
49	violet	brown
50	violet	slate

Glossary

Carrier Detect Indicator

The carrier detect indicator is associated with the modem port on the Control Card. This indicator should be lit during data transfer by modem. It indicates that the local modem has detected the remote modem's carrier, which is a basic attribute of the data transmission.

Collision Indicator

The collision indicator is associated with the network (Ethernet) port on the Control card. This indicator is on when a data collision on the network is detected. Such collisions will normally occur in Ethernet, but if too many are indicated the network may have too much traffic and/or too many devices on it. Such a network problem could be solved by sub-dividing the network with a switching hub.

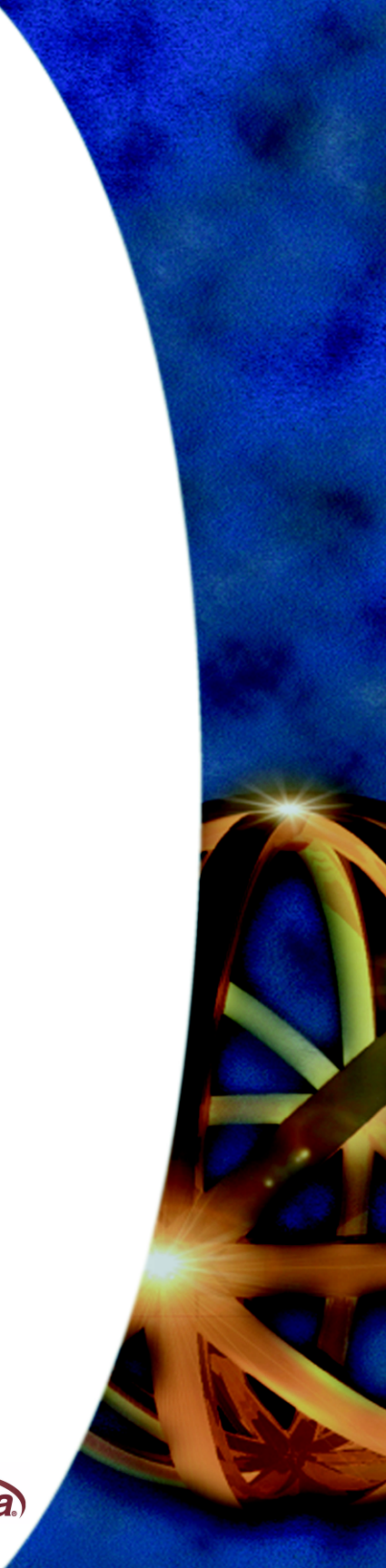
Configurations

XMU+ configurations are composed of commands, nodes, messages, and music that are executed when a call is received. Configurations are designed on XMUCOM+ software and then downloaded to the XMU+ unit.

Dual Tone Multi Frequency (DTMF)

A telephone's touch tone system uses pairs of tones to represent the various keys. There is a "low tone" and a "high tone" associated with each button (0 through 9, * (star), and # (pound)).

The XMU+ uses a DTMF node to identify the unique tones pressed by a caller on a touch-tone telephone and route the call accordingly.



Ethernet

Ethernet is a popular Local Area Network (LAN) type originally introduced by Xerox and now supported by an IEEE standard. Ethernet uses a Carrier Sense Multiple Access / Collision Detect (CSMA/CD) technique to accommodate multiple devices on a common medium such as twisted pair cable. The XMU+ Control Card network port is an Ethernet port. It supports data transfer at 10 or 100 Mbps (less control "overhead").

Hot Swap

Cards with hot swap capability can be changed while the XMU+ system is operating. Line cards and power supply cards are hot swap types. For line cards, only those channels connected to the card to be removed and replaced are disrupted (or need to be taken out of service). Power supply cards can be swapped with no disruption to system operation so long as there is a second (redundant) power supply card.

Lines

Lines are the telephone lines (extensions) that can connect to the XMU+.

Link Indicator

The link indicator is associated with the network (Ethernet) port on the Control Card. This indicator is on when the port is connected to an active Ethernet network.

Memory Module

Memory Modules reside on the Control Card, and provide working and non-volatile memory storage for messages and configurations within the XMU+. Memory Modules are replaceable and upgradeable.

Modem

A device for transferring digital data over analog telephone lines. Modem is the contraction of the words MODulator DEModulator.

Node

XMU building blocks consisting of a group of commands or XMU settings that are used to build XMU+ configurations.

Port

A female connector on the XMU+ for connecting the (male) connector of various external devices.

Public Switched Telephone Network (PSTN)

The public telephone system that operates the normal phone system.

Uninterruptible Power Supply (UPS)

The XMU+ can be connected to a UPS, which will maintain the XMU+ for a limited time in case of a power failure.

XMU+

The XMU+ Digital Call Processor is a microprocessor based, voice announcement and call processing system.

XMUCOM+

The XMUCOM+ software is a windows based program that lets you configure, download, update, and backup configurations and messages to the XMU+. Configurations designed with XMUCOM+ are transmitted to the XMU+ unit through a modem connection or through LAN based networks.

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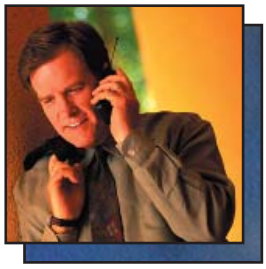

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4110 - 79th Street N.W.
Calgary, Alberta
Canada T3B 5C2
Tel: +1 403 288 2706
Fax: +1 403 288 5935
info@interalia.com

10340 Viking Drive, Suite 135
Eden Prairie, Minnesota
U.S.A. 55344
Tel: +1 952 942 6088
Fax: +1 952 942 6172
info@interalia.com

Bridge End Road
Grantham, Lincolnshire
England NG31 7TS
Tel: +44 (0) 1476 594207
Fax: +44 (0) 1476 594208
info@interalia.com

www.interalia.com